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TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY.

REPORTS OF THE OFFICERS

FOR THE YEAR ENDING NOVEMBER 1, 1903,

AND

ESSAYS FOR SEASON OF 1904.

Worcester, Mass.
THE HAMILTON PRESS,
No. 311 Main Street.
1904.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY

For the Year Ending Oct. 31, 1903.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the

Worcester County Horticultural Society:

The weather conditions of the past season have been very unsatisfactory for the growers of fruit, flowers and vegetables. November, 1902, was so warm the growth of trees and shrubs was soft and unripe and in very poor condition to stand the severe cold weather of December 8, 9 and 10, which was several degrees below zero. This caused in many cases the killing of various shrubs, particularly Privet hedges. The winter opened with very little snow, March being so warm as to cause buds to swell—and in as advanced a state as they should be in April—in fact April and March exchanged places. Strawberries couldn't be kept back by covering as they pushed up through the mulching; then the cold storms and frost killed the first bloom. Later they bid fair to have a crop, when the drouth struck them and nearly dried them up. Then the cold rain came and rotted them on the vines, after which we had pleasant weather for a few days. Saturday I visited one of our large growers and looking over his beds we estimated he would pick the first of the week, at least one hundred and sixty crates. Sunday and Monday were so hot the upper side of the berries were scalded so that he picked *less* than ten crates.

Apples, pears, plums and cherries blossomed and indicated a good crop, but the late spring frost injured the plums, cherries

and grapes, so that in many sections they were a total failure. Peach buds were injured by the December freeze so they were a failure.

For the odd year there is a large crop of apples—particularly Baldwins—and also a fair crop of pears.

All fruits except apples have shown the effects of the season climatically, to a greater or less degree.

The season early was very unfavorable for grass, the drouth nearly destroying it. Lawns were in a bad condition; the rainy season of June and the almost continuous showers throughout the season have saved the crop, and today they are in fine condition. Our first general killing frost was Wednesday night October 21; the season being long enough so that we had flowers from out of doors for our October 15 exhibition.

The early summer exhibitions showed the effects of the variable season more than the spring or autumn ones. Our market gardeners of today use so much glass in the way of cold frames, hotbeds and greenhouses, that good exhibitions can be held at any time or under any condition of weather.

Peas came in early; June 4, we had two exhibitors and the season lasted for two months. Corn, beans, tomatoes and squashes came in slowly, two or three weeks behind the schedule. Cucumbers and melons were nearly a failure.

The flower exhibitions as a whole have been good. The weather seemed to suit gladioli, dahlias and tuberous begonias, the exhibitions of these being fine. Let one judge from an exhibition standpoint and he would say that the season was a very favorable one for the production of horticultural products except grapes, melons and peaches, though one of our number managed to have just enough peaches to take nearly all the premiums here and in Boston.

The Massachusetts Society exhibition for fruit and vegetables has been materially increased by contributions from our members.

The exhibitions of September 24, and October 15, were fine—some of our members think the best we ever had.

On invitation of our President a party from the Massachu-

setts Society were present October 15, and were our guests. Their appreciation of our exhibition is best expressed by the wish that they could take it as it was shown and put it into their hall for their chrysanthemum exhibition of November 5, 6, 7 and 8; and their appreciation of our hospitality by saying they always accept it when invited.

The exhibits of fruits, flowers and vegetables were far above the average, and the decorations of the hall itself were beautiful. The stage was banked with palms and ferns, furnished by Lange; and from the centre of the hall mammoth orchids were suspended, from the conservatories of G. Marston Whitin, of Whitinsville.

Not having killing frost up to this date there were four hundred vases of flowers shown, and F. L. Burt, of Taunton, showed three hundred vases of dahlias.

At 12:30 o'clock dinner was announced and the members of the Society and their guests repaired to the banquet hall, where the dinner was served.

The guests were: Patrick Norton, Chairman of the garden committee, and William P. Rich, Secretary of the Massachusetts Horticultural Society; J. Lewis Ellsworth, Secretary of the State Board of Agriculture; Mr. and Mrs. Henry Wild of the Blake estate, Brookline; George H. Sargent of *The Boston Transcript*; John Ash of the Clark estate, Pomfret; H. P. Kelsey, Boston; Judge L. A. Catlin, Woodstock, Conn.; George S. Ladd, Master of the State Grange; and Mr. Scott of the New England Educational League.

After the dinner President Hadwen opened the exercises with a few words of welcome, and reminiscences of the past sixty years.

Short addresses were made by Judge Catlin, Secretary Rich, George S. Ladd, Mr. Scott, H. P. Kelsey, J. Lewis Ellsworth, George H. Sargent, John Ash, Henry Wild and Patrick Norton.

I have had very few complaints this season of damage from insects except San José scale. I have personally examined every case that has been reported and have several cases that I am watching carefully for future reports.

I have also distributed scions as in past years, the Sutton being in the greatest demand, using at least one thousand of that one variety; and am indebted to David L. Fiske, as in former years, for them.

Our winter meetings have been well attended; two of them we arranged for Saturday and I am sorry to say they didn't accomplish what we expected—that is an attendance of teachers and children.

I am sometimes asked why we don't try to encourage the children more and have been referred to what they do in Boston. I fail to see any comparison between the two cities. The children of Worcester have an opportunity to see green grass, trees, shrubs, flowers and fruit growing, which the children of Boston do not. I have honored every request for plants, seeds, etc., that children have made upon me. I have had many funny, odd and curious experiences with these people making requests for the children. I have noticed almost invariably these people never give seeds, plants or money to buy them—only talk. Now it needs something more than giving seeds or plants; you must keep them in sight, or after the novelty wears off their interest is gone. Then again it isn't every child that is interested in horticulture and when I find those who are then I encourage them all I can.

There are several schools I am interested in and visit every year. I have suggested several things and have tried to induce them to grow something and bring it in to our exhibition. This year I haven't given as many seeds as in former years, for Mr. W. D. Ross wanted to try the experiment of encouraging children in horticultural matters. If this Society takes this matter up, those interested must give it their personal attention and follow up individual cases where they show an interest—as they do in Boston. It cannot accomplish anything simply by voting to do.

We are indebted to Miss E. J. Clark of Pomfret, Conn., for very fine exhibitions of peaches and nectarines grown under glass; Mrs. John C. Whitin of Whitinsville for peaches and grapes; also G. Marston Whitin of Whitinsville for grapes,

one bunch weighing eight pounds and six ounces, also decorative plants, Dipladenias and orchids; Eugene V. R. Thayer of South Lancaster, seedling orchids; Bayard Thayer, South Lancaster, for a display of water-lilies and other aquatics; H. L. Burt of Taunton, a display of dahlias; and Arthur Cowee of Berlin, New York, for several displays of gladioli.

A creditable exhibition worthy of notice was the one of gloxinias, G. Marston Whitin, Fred A. Blake, Edward W. Breed and Matthew J. Whittall filling nearly seven hundred vases.

Upon invitation of the Massachusetts Horticultural Society, the American Pomological Society met with them in their halls in Boston, September 10, 11 and 12. Your Secretary received an invitation for this Society to co-operate with the Massachusetts Horticultural Society. We accepted the invitation and made a very creditable exhibition of one hundred and fifty plates of fruit, and particularly of fruit originating in Worcester County; and it was with pleasure that I could furnish specimens (both of type and color), for the Department of Pomology at Washington and The New Hampshire Agricultural College. A specialist in the development of seedling apples, from Minnesota, who had on exhibition two hundred and sixty varieties of apples—the parentage on one side all of one variety that is perfectly hardy in that climate crossed with other varieties. It was surprising how readily the other parent could be determined.

By invitation of our President O. B. Hadwen, nearly one hundred and fifty members visited his home and grounds on Lovell street, Wednesday, June 10. Lunch was served under the trees, and a vote of thanks was given Mr. Hadwen for his hospitality. Such meetings are a source of pleasure and are highly appreciated.

The Worcester County Market Gardeners' Association, the Worcester County Bee Keepers' Association and Massachusetts Fruit Growers' Association tendered this Society votes of thanks for the use of our rooms. These meetings are open to all and have proved valuable to those interested in these special lines.

We are indebted to the press for liberal notices of our meetings and exhibitions. Sometimes the reports after the meetings are not always satisfactory to some of the members. If reporters were good horticulturists this would not happen. Perhaps it would be well to class them with the children and try to interest them in such matters. I am sure this field would produce much good in the future.

In conclusion I desire to thank the officers and members for their uniform courtesy and willingness to assist in any way they may have been requested so to do.

The annual meeting of the Society was held Wednesday, November 5, 1902. The meeting was called to order at 10 o'clock A. M.; President O. B. Hadwen presiding.

The records of the last annual meeting were read and approved.

Nathaniel Paine, Treasurer, read his report, which was referred to the Committee on Publication.

Adin A. Hixon, Librarian, read his report, which was referred to the Committee on Publication.

Adin A. Hixon, Secretary, read his report, which was referred to the Committee on Publication.

Voted, To proceed to the election of officers, a list of whom will be found on the covers of the various publications of the Society.

Voted, That the Secretary notify (by postal cards) members of any invitations that the Society may receive.

Voted, To dissolve.

Annual meeting of the Trustees was called immediately upon the dissolution of the meeting of the Society, President O. B. Hadwen presiding.

The election of committees and judges was in order, a list of which will be found with the officers.

Voted, To appropriate the following sums for premiums:

Flowers and Plants	$1,000 00
Fruit	850 00
Vegetables	650 00

Voted, To appropriate for Winter Meetings, $300.00.

Voted, To appropriate for Library and Publications, $300.00.

Voted, For San José Scale Commission, Charles Greenwood, James Draper, Henry Rich, C. L. Hartshorn, President Hadwen and Secretary Hixon.

Voted, To dissolve.

During the year the following additions have been made to the membership:

Mrs. Emma M. Davis,	Worcester.	Myron F. Converse,	Worcester.
Clarence J. Howland,	"	Mrs. Gardner E. Adams,	"
Arthur W. Woods,	"	Sam'l B. Woodward, M. D.	"
Miss Louise Woods,	"	Mrs. Chas. Hacker,	Phila., Penn.
Orin P. Durkee,	"	Mrs. E. J. Whitney,	Shrewsbury.
James Edwin Draper,	"	Asa W. Ward,	Auburn.
Mrs. E. S. Desautell,	"	Mrs. Ed. A. Warren,	Spencer.
Charles R. Russell,	"	H. C. Fuller,	Leominster.
Fred H. Hammond, Jr.,	"	C. A. Harris,	"
Mrs. Frank A. Hadley,	"	Fred J. Reed,	Shrewsbury.

Respectfully submitted.

ADIN A. HIXON,
Secretary.

Horticultural Hall, Worcester, Mass.

October 31, 1903.

REPORT OF THE LIBRARIAN.

To the Members of the

Worcester County Horticultural Society.

In presenting my report as Librarian I desire to call your attention to the fact that there hasn't been any binding done for thirteen years.

The following books, periodicals, bulletins and papers have been added to the Library during the year:—

Interstate Commerce Commission. 16th Annual Report. 1902.

Missouri Botanical Garden. Fourteenth Annual Report. 1903.

United States Department of Agriculture. Section of Foreign Markets. Bulletins, Nos. 28 and 29, 1897 to 1901. Report, No. 67, 1901. Circular, No. 25.

Library Bulletin. Accessions to the Department Library, October, 1902, to March 30, 1903.

Michigan State Agricultural College Experimental Station. Bulletins, Nos. 204, 209, 210. Special Bulletin, No. 20.

Maryland Experimental Station. Bulletins, 87, 88, 89.

West Virginia Experimental Station. Bulletins, 84, 85, 86.

Rhode Island College of Agriculture and Mechanic Arts. Bulletin, 90.

Hatch Experimental Station. Bulletins, 90, 91, 87.

Meteorlogical Reports for the Season 1902 and 1903.

New York State Museum. Bulletins, 57 and 59.

Elm Leaf Beetle and Grape Vine Root Worm. Hand Book, No. 18.

Insecticides and Fungicides. Dr. E. P. Felt.

Field Columbian Museum. Publication, No. 69. Botanical Series, Vol. 3, No. 1. Plants of Yucatan, 1903, Publication, No. 70, Vol. 2, No. 2. Annual Report of the Directors of the Board of Trustees, 1901-1902.

Transactions of Iowa Horticultural Society. 1901, Vol. 36. Compliments of J. V. Jackman, Marlboro.

List of National, State and Local Commercial Organizations. Also Agricultural Organizations. 1903. Compiled by the Interstate Commerce Commission.

Prospectus of the Columbia School of Poultry Culture, Waterville, New York. Prof. A. A. Brigham.

Principles of Profitable Farming. German Kali Company.

New Rhubarb Culture. J. E. Morse and G. Burnap Fiske. 1902.

The American Carnation,—How to grow it. Charles Willis Ward. 1903.

Carnations and Picotees. H. W. Weguelin. English. 1900.

Mendell's Principles of Heredity. W. Bateson, M. A. 1902.

Rise and Progress of the Standard Oil Company. Gilbert Holland Montague. 1903. Compliments of Harper Brothers.

Contest for Sound Money. 1903. Compliments of A. P. Hepburn, Secretary of National Sound Money League.

In Portia's Garden.

What is Art. 1898. Tolstoi.

Webster's Unabridged Dictionary.

Massachusetts Board of Agriculture. Report, 1902. James W. Stockwell, Secretary. 20 copies for distribution.

Massachusetts Crop Reports. For the season 1902, 1903.

Massachusetts Horticultural Society. Transactions. Part 1, 1903. Part 2, 1902.

Report of Committee on School Gardens and Children's Herbariums.

Worcester Parks Commission. Report for the year ending Nov. 30, 1902.

Inaugural Address. Mayor Edward F. Fletcher. 1903.

Worcester Magazine. 1901, 1902, 1903. Charles Squier, Secretary Board of Trade.

Report of Board of Trade. 1903.

Worcester Agricultural Society. 84th Annual Report. 1902.

Worcester City Directory. 1903.

Worcester House Directory. 1903.

Worcester Suburban Directory. 1903.

American Florist.

American Gardening.

Country Life in America.

Country Gentleman.
Farm Journal.
Florists' Exchange.
Florists' Review.
Floral Life.
Gardening.
Gleanings in Bee Culture.
New England Homestead.
Massachusetts Ploughman.
Out West.
Park and Cemetery.
Rural New Yorker.
Worcester Daily Spy.
Worcester Daily Telegram.
Worcester Daily Post.

English:

Agricultural Gazette.
Garden.
Gardener's Chronicle.
Gardening Illustrated.
Country Life.

Respectfully submitted.

ADIN A. HIXON,
Librarian.

HORTICULTURAL HALL.
November 2, 1903.

REPORT OF THE TREASURER.

The Treasurer of the Worcester County Horticultural Society, herewith presents his report for the year ending October 27, 1903. The present funded debt of the Society has been reduced $900 during the year and is now $7,500.

There is no floating debt at this time except a few small bills, which were not received in time to come into this report.

The Dewey Fund will show an increase of $52.21 and the Eames Fund $22.81 on account of interest accrued from the Savings Bank deposits.

The Dewey Fund amounts to $1,357.61 and is now available for the purchase of books for the library. The Eames Fund is $593.68, the original amount was $500, so that there is now a margin of income for carrying out the wishes of the founder of the Fund, viz.: "the promotion of apple culture."

The detailed report of the receipts and expenditures here follows.

NATHANIEL PAINE, Treasurer, in account with
WORCESTER COUNTY HORTICULTURAL SOCIETY.

DR.

1902.		
Oct. 24.	Cash balance as per last report,	$1,361.94
1903.		
Oct. 24.	Receipts to date:	
	From rent of stores,	6,500.04
	" rent of hall,	5,221.75
	" membership fees,	87.00
	" sale of tickets for annual banquet,	137.00
	" interest on investments,	144.05
	Interest from Savings Banks,	75.02
	Other sources,	35.00
	Total,	$13,561.80

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1903.			
Oct. 24.	Payments to date:		
	City taxes and water bills,	$1,049.89	
	Premiums paid to exhibitors,	2,003.88	
	Paid judges of exhibits,	172.00	
	" for gas and electric lighting,	821.18	
	" A. A. Hixon, salary as secretary,	400.00	
	" A. A. Hixon, as librarian, and for care of hall,	1,000.00	
	" treasurer,	150.00	
	" janitor,	500.00	
	Deposited in Savings Bank,	75.02	
	Interest on Sav. Bank loan,	378.00	
	For coal,	505.62	
	" printing,	149.16	
	" books and periodicals,	50.72	
	Insurance,	30.81	
	Account of annual banquet,	258.95	
	Incidentals, including telephone, and sundry hall expenses,	605.24	
	Paid on note,	900.00	
	Invested in collateral note,	3,362.79	
	Total,	$12,413.26	
1903, Oct. 24.	Cash balance,	1,148.54	
			$13,561.80

The Francis H. Dewey Fund.

1902, Oct. 24.	Balance of fund,	$1,305.40
1903, Oct. 24.	Interest to date,	52.21
1903, Oct. 27.	Present amount of fund, invested in Savings Bank,	$1,357.61

THE WILLIAM EAMES FUND.

1902, Oct. 24.	Amount of fund,	$570.87
1903, Oct. 24.	Interest to date,	22.81
1903, Oct. 27.	Present amount of fund invested in Savings Bank,	$593.68

NATHL. PAINE, *Treas.*

October 27, 1903.

The undersigned Auditors of the Worcester County Horticultural Society hereby certify that we have examined the above account and find the same to be correct and properly vouched, and the investments and cash accounted for.

HENRY L. PARKER.
F. H. CHAMBERLAIN.
JOHN B. BOWKER.

Worcester, Oct. 27, 1903.

ESSAYS.

A. D. 1904.

WORCESTER COUNTY
HORTICULTURAL SOCIETY

7th January, A. D. 1904.

ADDRESS

BY

O. B. HADWEN, President.

It has become a custom of late years that the winter meetings be opened by the presiding officer, with brief remarks regarding the interest and progress of the Society, and the objects it seeks to encourage. I will not dwell on the past, with which you are all familiar, but rather today look forward and see, as best we may, what in the future will demand our attention; and first will say that the financial condition of the Society was never better. The old New England thrift with which our Society has been managed for the long term of its existence has largely contributed to our wealth and prosperity, and we owe a debt of gratitude to the noble men whose foresight led them to purchase this spot of ground upon which our building stands; and to the benefactors whose money and timely efforts give us a building second to none in location and convenience, in this country.

Valuable contributions to horticultural science have been made through the lectures and discussions of our weekly meetings during the winter season for the past several years. We have kept in view the fundamental object for which our Society was formed, "for the purpose of encouraging and improving the science and practice of horticulture," and with our sixty-three years of experience, which seems yearly to be on the

increase, we have demonstrated that our leading cultivators are striving in honorable competition to bring to perfection the various products of the field and garden, and with the active competition in our exhibitions, aimed at the highest standard of excellence.

Especially with vegetables and flowers, much of the improvement is due to the increased care used by cultivators of the importance in the growing and selection of seeds; by constant care in their selection and saving seeds from the earliest and best developed specimens, an increased product is obtained in size and color, which always proves essential in competition and for sale.

We note the capacity of plants to extract from the earth and atmosphere each its food and nourishment, and to develop bud, leaf, flowers and fruit in constant succession, unvarying in general type and variety, each true to its kind, yielding at maturity food for man and beast, as well as for the innumerable insect tribes, and with decay in longer or shorter periods of time, supplying food and nourishment to the life and growth of other plants in endless rotation. While horticultural science assures us of the germinal principle of seeds, we are as yet unlearned in the science of cross fertilization or the methods by which the qualities of flowers and fruits are transmitted from one to another through the pollen, by insects and the wind.

The study and practice of horticulture has a tendency to raise man to a higher level. It quickens and intensifies his senses of sight, taste and smell, and increases his mental scope and his capacity for the enjoyment of life.

The future of the country depends upon the proper education of the children, and if this Society can do anything to get the children interested in the cultivation of flowers or fruits, it should do so.

There are many difficulties in the way when we attempt a solution of horticultural teaching of school children, the use of their hands in the cultivation of plants and an interest in the pursuit. The Society should look into this question carefully and if a practical course can be devised to elevate the

education of children in horticulture, it should be improved. Is it not time to make a special effort to interest children in gardening, not only in theory, but in practice?

Even our country-bred boy, or man, or woman, does not sufficiently realize the resources and charm for enjoyment of country life,—the trees, the waters, the hills and landscape: ever changing in its contour, with its seasons, never tiring to those who are trained to appreciate the resources of the country for like enjoyment. Why should we not contribute substantial aid to teach the children to know the common things which surround them? Many of our people prefer to amass money to spoil their children, instead of fitting them to make a living for themselves and trained to its enjoyment.

It is a remarkable fact that farming and gardening are the only occupations carried on for fun. Men retiring from all other business or occupations, either go back to the farms or long for the opportunity, and are liberal with the expenditure of money to beautify the old homestead.

The introduction of evergreen trees of late years is proving an immense gain to us in our cold winters. With our numerous varieties we can enliven the evergreen effect about our dwellings; by the judicious use of those we now have, a charming effect can be produced in the landscape, or to a rural home, far surpassing any other means of embellishment, or as shelter belts for the protection from winter blasts.

We are learning the importance of liberal treatment of all the evergreens to produce the finest color or sheen of foliage, and the most symmetrical and stately trees. To succeed in any department of husbandry one must know the laws of nature which control the development in each specialty, and learn the best methods of application to secure a desired result.

Trees, indigenous as well as exotic, the cultivated as well as those of nature's planting, teach us the need of variety. There is no monotony in variety of trees, something new is ever being presented to us, which ever delights with its novelty.

Each department of nature has its own lessons of science

or art in the grounds about dwellings. Through it the highways are made delightful with trees, gardens are tastefully laid out, forming a pleasure in themselves, and an element of beauty in the landscape. Wherever it touches it gives the impression of wealth and happiness in nature, which is skilfully enhanced through contributions rich and unique, coming from different lands and contrasting climates.

The love of gardening seems natural to very many. Man has an inherent love of these beautiful things, but there still exists, largely through a great lack of education in early life, something wanting in the practice of horticulture in its higher branches. An anecdote is related of the late Joseph Breck, once president of the Massachusetts Horticultural Society, when riding in a street car with a large bouquet in his hands. A little girl kept passing back and forth before him, and evidently admiring the flowers so much that he took out some and gave her. Some time after, he was riding again when a little girl, whom he did not recognize, kept passing before him and looking up at him, and on being asked if she knew him, she replied: "O, yes, you are the gentleman who gave me the flowers." Mr. Breck turned to a friend beside him, and with tears in his eyes, said: "We can afford to be at some pains to grow and distribute flowers if they give so much happiness."

Those who enjoy beautiful natural or cultivated scenery occupy a higher plane than those who do not. There is nothing more beautiful than the bloom of many of the fruit trees. It is an interesting fact that there is no fruit until after the flower,—beauty comes before reproduction.

The President now introduced Miss Mary C. Henry, principal of Upsala street school, who explained how gardens of that school were cultivated by the pupils.

A small portion of the schoolyard is taken for the garden. The ground is marked off and spaded. In turning up the soil, the larvæ of many insects are found. These are put one side for future study. The plots are made and the depth for plant-

ing the seed (spreading seed, my pupils call it), considered. This brings out many interesting observations.

If the seed is planted too deep, it will be lost in the soil; if too near the surface, the rain will wash it away—observations again with purpose. The right depth is at last decided upon and the seed planted. Then begins a daily scrutiny of the garden, every morning before school. It leads to the discovery that the earth is cracking, and the children say that the seeds are swelling and will soon be up. They are right. A triumphant report is soon made: "Our seeds are up!" The unfortunate person who has never planted a seed can never know the pleasure and gratitude and triumph in that report, "Our seeds are up!" The miracle is a miracle still. Could any lesson in pulling flowers to pieces and giving scientific names to the plants inspire a child as this does? Is there any doubt in your mind which lesson you would choose for your children?

Would you prefer to have your child learn that our innocent little saxifrage had leaves "oborate or oval-spatulate, narrowed into a broad petiole, crenate-toothed, thickish; flowers in a clustered cyme, which is at length open and loosely panicled; lobes of the nearly free calyx erect; not half the length of the oblong, obtuse petals, follicles united merely at the base, divergent, purplish," or to find out how and where it grew and how to make it comfortable in a garden? Which is connected more closely with the life interests and activities of the child? Which contains more promise for the future? Hundreds of men cannot read a line of Greek or Latin after they have been out of college a few years. But had these same men spent four years in studying practical agriculture or horticulture the chances are that they would never forget it.

Few schools can afford to give much land for garden purposes. But it requires little land if worked as a common garden and not as individual plots. This is the plan followed at the Upsala street school, where, owing to the generosity of Miss Helen A. Ball, who gave loam, tools, plans and seeds, garden work has been carried on for years.

Lessons are given to the whole class and all of the work is done by the pupils; spading, spreading fertilizer, measuring, planting, hoeing, weeding, watering,—every part of the work, in fact. This I insist upon. I do not think it part of the janitor's work to help with the garden. If the difficult work is done for the pupils in the school garden, it tends to make them helpless, when left to themselves to make a home garden.

SILAS A. BURGESS, President of Worcester County Market Gardeners' Association.

"I think that this city and every city in the Commonwealth should appropriate a certain tract of land for the purpose of teaching the children gardening, and think they should go at the work with a will." The influence of such gardens upon the minds and character of the children could scarcely be overestimated. It would make them better citizens of the city and the country.

JAMES DRAPER, Secretary of the Parks Commission.

There is opportunity for Worcester in children's gardens, if proper organization were effected. If all the teachers are as enthusiastic as Miss Henry and could give the time, and if the curriculum of the school could be so arranged as to give teachers time, it would be all right. Time is necessary, for the ordinary teacher is worked hard. He said he knew because he had four daughters teaching, from kindergarten to normal school.

He said the Parks Commission had not yet taken decisive action, but would be willing, he had no doubt, to give a plot of land for the purpose. But the Parks Commission would not give land unless it were assured that the tract would be an ornament to the park system of the city all the year round. The Horticultural Society should be able to do something to encourage. A splendid opportunity, he said, is before the Society.

"Let the Horticultural Society devote some of the premiums which it almost invariably gives for Baldwin apples and other things to the garden for the children.

"There is one question I would ask Miss Henry, and that is whether the garden would be taken care of by the children during the vacation season?"

MISS HENRY.

The garden has been taken care of during the vacation by volunteers.

CHARLES E. PARKER of Holden.

"When you come to school gardens in the school lot, I have yet to see one that is any good for the growth of flowers or anything else. But if there were lots in a convenient place, suitable for the growth of the plants, it would be all right. But when you grow flowers on asphalt paving or bricks, or behind brick walls four or five stories high, nothing creditable can be done. If the Parks Commission can give the proper land, I am in favor of the gardens."

President O. B. HADWEN.

"I was born in the city, and it was there that I got my first love of flowers and gardening. I had the pleasure when a boy of attending a school where there was a school garden. It wasn't a reformatory school, either. It was at the Friends' School in Providence, and there an acre or more was given the boys to cultivate. They plowed it, harrowed it and put it in order, and then it was divided into lots, and each boy got his portion to seed, plant and take care of. I believe that flowers have a certain dignity of their own, which would prevent molestation. When we planted water-lilies in University Park and they came out in various colors, such as boys had never seen in water-lilies before, the boys got wire hoops

and lassoed them, but in a short time that was stopped, and since the first season they have not disturbed them."

Remarks were made by HERBERT R. KINNEY, WALTER D. ROSS and ARTHUR J. MARBLE.

Secretary ADIN A. HIXON.

The reason why the Worcester County Horticultural Society had previously opposed school gardens was the fact that the matter had been presented wrongly. There had been a club in the city, called the Civic club, which did all manner of suggesting, but made no move to help along any of those suggestions being put in practice.

"Besides that," he said, "a principal of a school in Worcester who had been the loudest spoken for such gardens had one in his own school. It may have been all right in the spring, but when officers of the Horticultural Society and others passed by it during the vacation season it was absolutely uncared for and weeds grew all over it, killing off everything.

"I have always been an advocate of school gardens," Mr. Hixon added, "and in a small way have done all I could to encourage love of flowers among children, by giving them seeds, plants and assisting them in their Arbor Day celebrations."

CALVIN L. HARTSHORN

Moved that a vote of thanks (which was unanimously adopted), be extended President Hadwen and Miss Mary C. Henry.

14th January, A. D. 1904.

LECTURE

ILLUSTRATED BY STEREOPTICON.

BY

HERBERT D. HEMENWAY, HARTFORD, CONN.

Theme:—School Gardens.

IT is recognized, that a child's education is not complete until he has learned something of the world he lives in, something of the food he eats, and how it is produced. There is nothing more fascinating to the boy shut up in a factory than a broad expanse of green fields, waving corn or shimmering wheat. But that boy cannot get out among those fields as he would like. He eats bread, potatoes, radishes, cabbages and other vegetables, but if he is confined in a factory he does not know how they are produced.

It was the realization of this, that factory boys lose the opportunities of country boys, that induced the president of the National Cash Register Co., Dayton, O., Mr. Patterson, to lay out a large plot of land in children's gardens. He got a piece of land adjoining property owned by the company in Dayton, and several college graduated agriculturists to act as head gardeners. Their instructions have made the summer life of the boys employed in the factory much more pleasurable than it could be otherwise.

There are seventy-one boys' gardens in this plot, which covers six acres. Each garden is ten feet wide and one hundred and seventy feet long. One boy cares for a garden. In the gardens are radishes, corn, lettuce, beets, carrots, cabbages, string beans, peas, onions, parsnips, turnips, potatoes, tomatoes

and other every-day vegetables. Each kind of vegetable has a separate bed.

The company furnishes seed, fertilizer and tools. The boys plant the seeds and care for the plants. The boys develop the most lively interest in their gardens. They can take all the vegetables. One boy last year produced enough vegetables to provide food for a family of four and cleared five dollars. Others were equally successful.

The company offers prizes to the boys having the neatest gardens, and those which produce the most. Three officers of the company, who have no relatives in the gardens, are judges, and once a week they inspect every garden, and at the end of the season prizes are awarded.

President Patterson says it is a great success. Just before he left the United States on a trip to Europe, the boys gave him a banquet at a club of officers of the company. There were about two hundred present, and all the vegetables used were grown in the boys' gardens.

Boys are allowed to use their gardens two years in succession; they are then given diplomas and their gardens turned over to other boys. When the gardens were laid out, the land was worth but $300 a lot, but now it cannot be bought for $900 a lot.

On the outskirts of almost any city, one can secure land at about $100 an acre. Get ten acres, and you would have all the land necessary for a first class set of children's gardens. The cost of buildings, such as a small conservatory, tool houses and shelters, would be about $300. A head gardener could be secured for about $500 a season, six months.

At Hyannis, on the cape, there are children's gardens in connection with a normal school. They are successful. There is nothing like practical gardening to assist in nature study, geography, horticulture and other subjects. In connection with these gardens, the study of bookkeeping is taken up. The children keep account of the seeds they use, the hours they work, and the time occupied in the growing of vegetables.

When they sell vegetables, they make a record of the proceeds,

deposit the sum in the school bank. At the end of the season they have a little fair, exhibit the produce, are awarded prizes, and pay their share with a check from their bank account.

It is necessary that children should know something of agriculture. When one takes into consideration that 65 per cent. of the exports of the country are agricultural, he may see the extent of agriculture. Instruction in elementary subjects is necessary for all children, but if we can add elementary agriculture we will have added a great deal.

At Providence the pupils have gardens in the school yards during vacation time, and grow vegetables that mature quickly. At East Dedham, there is a school garden plant, covering four acres. At Hampton, Va., a great work is being done among colored children through the school gardens. In the Hawaiian Islands this system of teaching agriculture has been in force since 1849. Near Honolulu there are several school gardens. They were founded by missionaries, and their work has had much to do with bringing the inhabitants of the island from barbarism to civilization.

The school of horticulture at Hartford is part of the Handicraft School System and covers about five acres, on which are grown all kinds of vegetables.

The pupils at this school are mostly from the public schools. Any pupil above the fifth grade is eligible. The only rules necessary are prompt and regular attendance at classes, a well-kept record book and clean tools. Few children drop out of the classes, and none because they do not like the work. There are classes for adults, most of whom are nature study teachers in the public schools.

The school also has a number of observation plots, which are cared for and experimented upon by directors of the school. In these plots are hemp, cotton, sugar-cane, tobacco, flax and almost every vegetable and grain that will grow in New England.

Practice in measuring, planting of seeds, cultivation of the plants, the watching for things to come up, learning to observe what they look like, and to understand something of what they see, the growing love for nature and things beautiful,

learning habits of industry, keeping the boys occupied when, otherwise, they would be on the street, and the physical development in the pure air,—these are some of the things which are of far greater importance than garden produce, both to the boys and to the state. The practical nature study is of fundamental importance to the boys and girls of today.

What is said of the boys' classes is equally true, and perhaps more so, of the girls. Girls have not now the same liberty, especially in the city, that even the boys have in the open air. Learning habits of close observation and coming into loving contact with nature and with nature's God, cannot help but make boys and girls stronger, more intelligent, truer, nobler citizens.

During the lecture, Mr. Hemenway showed slides of children's gardens in Dayton, Ohio; Hyannis State Normal School of Massachusetts; Providence, Rhode Island, Vacation School; Boston Normal School; Franklin School of Boston; and George Putnam School of Boston; The Hopedale School, East Dedham; Hampton Institute, Virginia; School Gardens, St. Louis, Missouri; Riverside, California; Normal Schools, Willimantic, Connecticut; Children's Farm School, DeWitt Clinton Park, New York; Hartford, Connecticut; Horace Mann's School, Minneapolis; School 29, Rochester, New York; schools in France, Germany, Hawaii and Porto Rico.

One school garden worthy of especial notice is that connected with the Broadview, Boys Institute, Toronto, Canada.

This is a boys' club, an institute of non-residents, with a membership of over 500, mostly from the homes of artisans. In addition to the outdoor sports for the summer is a course in agriculture and nature study. Last year they cultivated twenty-seven miniature farms, two boys in partnership to a farm. The twenty-seven farms constituted a township, the farmers electing their reeve and municipal council, who had charge of the township; appointed a path-master, constable and weed inspector. A fall fair was held and prizes given for the best vegetables and flowers. The experiment was so

successful that the township borders have been widened to take in seventy-four farms the past season.

During the lecture Mr. Hemenway answered questions regarding the work, and it was found that the work was conducted in a very practical manner, and that the most scientific methods of teaching were used.

21st January, A. D. 1904.

AN ADDRESS

BY

Rev. FRANK ALANSON LOMBARD, Doshisha, Kyoto, Japan.

Theme:—The Flora of Japan.

Mr. President, Ladies and Gentlemen, Members of the Worcester County Horticultural Society, Friends:—

To speak at this time of any subject connected with Japan is at once to call to mind the war clouds that hang, so dark and low, o'er the Eastern horizon. It is well that we should be thus interested, for to us Japan is bound by peculiar ties of sympathy, more spiritual than material.

As the Prince, in ancient story, found the Sleeping Beauty, and with a kiss called her from a century of slumber, so in the cold annals of history it is recorded that by the salute of an American gallant Japan's sealed eyes were opened to the light and the life of a modern world. Today she honors Com. Perry as a national benefactor; and, because of the unbroken spirit of kindness in which she has ever been treated by the United States of America, feels toward us as toward no other, England not excepted, an unquestioning confidence and regard. Her nation-proud people admit their debt to American life, character, education and ideals which have quickened her spirit and given inspiration and guidance to the efforts of her era of enlightenment. We also may well recognize that the obligations are mutual. We have received as well as given. Eastern beauty, natural and artistic, has enriched our Western life; Eastern philosophy, hoary with age, has impelled

Western thought to deeper introspection; and now as the West returneth unto the East, circling the globe, a contribution greater than in the past will come from the Orient rich in beauty and charm, richer in the unseen things of mind, heart and spirit than the eager, restless West has heretofore supposed possible.

In the "Federation of the World" for the advance of righteousness and truth, for the development of man unto the fulness of his stature, Japan stands side by side with England and America, through her affinities of blood wielding a mighty influence for the inspiration of the Greater Orient, for the realization of a brotherhood limited by no distinctions of color or of race. We are then, I repeat, rightly interested in her, for she is our sister,—in her success, for with it our own is vitally connected in the labor of love whereunto we have set our hands.

Whatever may tend to make her land more near, her life more real to us, may, therefore, rightly claim your kindly hearing; and, thus, ladies and gentlemen, it is with peculiar pleasure that I invite your attention to the flora of Japan.

The woods were God's first temples; and in the flowers is still revealed that love of beauty which is His who filleth all. From those forest temples man heard God's voice; and on the plains, star-lit above, flower-lit below, entered into fellowship with his Maker, growing strong of body, broad of mind, gentle of spirit, as the trees, the heavens and the flowers amid which he lived. And even now, amid the material wonders of a modern world, there is no place which, rightly appreciated, brings us nobler, sweeter inspiration than do the farmers' flower-decked fields, under the open heavens, surrounded by their wood-crowned hills. He has not left Himself without a witness in any region; and in Japan, though the grandeur of our Western scenery may be lacking, the picturesque and beautiful enfolds every hamlet and extends its influence to the heart of the largest city.

Off the Eastern coast of Asia, within a day's sail of shore, stretches an Island Empire, from the latitude of northern New Hampshire to that of South Carolina, containing an area of

150,000 square miles and a population of nearly fifty millions. Of its area scarcely more than one-eighth is arable, in fertile valleys span-wide, amid the mountains, and broadening to the sea. The mountains, of volcanic formation unsmoothed by glacial action, are wild and broken, bearing shrubs wherever a foothold is given, and having their lower slopes often carefully covered by government forests. Every inch of fertile land is used in intensive agriculture; and nature in all her forms is appreciated and employed in material or æsthetic service. The climate through that long reach of latitude varies from semi-tropical to where snow buries the villages during the months of a long winter.

A few words concerning Japanese agriculture in general may now not be inappropriate. All labor is manual except in the Hokkaido, where, I am told, American methods and machines are employed on the more extensive farms. In the agriculture of this section the influence of such men as Stockbridge, Brooks and others of our educators, who from New England went forth to teach and to learn, is vitally effective. The central and southern islands afford but slight opportunity for the introduction of our methods of agriculture, for reasons topographical and social that I cannot here recount.

Rice is the great staple. Seven million acres are cultivated, with an average yield of about twenty-six bushels per acre. Wheat, rye, barley, peas and beans, millet, buckwheat, rape, potatoes, Irish and sweet, are also raised in large quantities, though to none is given more than one-seventh as much area of cultivation. Small fields, often not more than thirty feet square, with levees a foot wide, curved and crooked, within which no draught animal can labor, are the usual farm lands. Nothing is sown broadcast, but in hill or drill; and the levee sides are planted with pulse. The soil is worked with spade and mattock, and kept fertilized with straw-ash and night-soil, for the gathering of which every home in city and country is visited, and for retaining which tanks are sunk in the corner of every field.

The rice is first planted thickly in seed-beds which are kept

flooded much of the time. When the plants are six or eight inches high they are transplanted into hills about a foot apart; and there carefully tended through all the period of their growth. It is a common sight to see men and women, up to their knees in muddy water, setting the plants or pushing the hand cultivator, by which they are later hilled more perfectly. The method of irrigation is often most primitive. If the fields are by a stream, the water is lifted into the sluice-ways by a great wheel, whose wide surface is laden with little buckets, which as the wheel revolves empty their contents into a leading-pipe. The whole is turned by human tread or, if the current is strong, by the force of the stream. Where there is no running water, many wells are sunk and from them by hand the water is drawn. About Kyoto the fields are watered from a branch of the great canal which for commercial purposes connects Lake Biwa with the city. At the harvest, four or five hills of rice are bound together and hung upon bamboo rods to dry. The grain is removed by hatchelling and winnowed by the breeze.

From this picture of simple conditions, however, do not hastily judge that we have nothing to learn from the agriculture of Japan. A willingness to learn is the hope of the agriculturist. In 1899 the United States Department of Agriculture introduced Kyushu rice with the purpose of developing the rice-growing industry in Louisiana and Texas. It would be quite apart from my intention to review the results. They more than met the most sanguine expectations. Believing that further improvement might be effected, Dr. S. A. Knapp was later commissioned to visit Asia and study the methods of rice-culture. His report is issued by the Department's Bureau of Plant Industry, Bulletin No. 35.

We call Japan a land of flowers. It is a land of trees also. Almost one-fourth of its plant growths are woody; and for its area Japan is unsurpassed in the number of forest trees. Yet many of our most familiar friends are there unknown; and those of you who have become at all interested in botanical study have observed that to many common names is added the term Japonica, to signify that the tree or shrub as there

found differs from the same in America. In general, as is natural, the kinship is closer between the flora of Japan and of Europe, than between that of Japan and of America. Through our increasing intercourse, the trees of either are becoming well known to the other. American apples flourish in Japan; and a beginning has been made toward the introduction of Japanese fruits in California, and of ornamental trees in New England. Nearly every lawn now boasts a few Japanese shrubs; and one need not leave Worcester to see a truly wonderful collection, in the grounds of that early and constant lover of natural beauty, President Hadwen, whose interest in and care for these beauties from the East have done much to introduce them to New England. At the Agricultural College in Amherst are a group of Japanese maples that are proving themselves hardy in our climate; and, if I understand correctly, most interesting experiments are being performed in the grafting of Japanese cuttings upon American stock with a view to securing the delicate beauty of the Japanese foliage upon our larger native trees.

The number of varieties in Japan valuable for timber is comparatively small,—due it may be to the rapid growth fostered by a damp climate. The maple, to which I have alluded, luxuriates in no less than twenty species, while in all of North America, I think, there are not half that number; yet with one exception they have no resemblance to ours, and none of them are timber trees. They are much smaller. Their leaves are far more delicate and deeply cleft, baby-hands as the people poetically call them. Some of them have bright foliage from bursting bud to falling leaf; and in autumn they rival ours in brilliancy, giving an effect quite different, though wherein the difference lies it is not easy to say. Many hills are covered with them. They line the sides of river-gorges; and for their beauty of form and color are planted in parks and private gardens. Wherever they flourish, there, in the days of their glory, throngs gather to warm their hearts at the fireside of the gods.

The Japanese are a nature-loving people; and make the

periods of her richest beauty in tree or flower the time of festival, when the populace *en masse* issues from village and city to bask in her bounty.

Not far from Kyoto is a famous maple scene. It occupies the slopes of a little valley, through which flows a crystal stream. Twice I have visited the place. Under a canopy of flame, or at a little distance whence could be seen the glow of nature's fire, picnicked hundreds of families, whose children, gay as the falling leaves, romped in the sunshine and shadow. Along the winding walks were booths, more numerous than at a New England fair, for the sale of things to eat, to drink, to play with, or to bear away as reminders of the scene. There might be found fried maples leaves, showing the bright colors and fine tracery, which had been dipped in transparent batter and for a moment dropped in boiling fat. The process went on before our eyes; and the crisp leaves were daintily boxed, that at the household evening meal the beauty of the woodland might be recalled. There were furoshiki also,—cotton kerchiefs painted from the life-blood of the leaves. The cloth was spread smooth upon a block of wood; the leaves were placed upon it in graceful figure and over them was laid another corner of the cloth. With gentle taps the painter hammered the imprisoned beauties until faintly, then in perfect form and color, they sought escape through the fabric. A few severe blows set, as it were, the pattern; and, when the cloth was unfolded, nothing remained but the leaf skeleton and upon the cloth a beautiful double design that, unless washed, would keep distinct and unfaded through long, long months.

Of the rose family also not one is of forest size. The most popular garden tree in all Japan is the plum, whose single or double, white, rose or red blossoms appear before the leaves in February and March, clothing the stalks and twigs in garments of beauty, concealing all but the tracery of the branches now made soft with bloom. Great care and labor is spend in training it, for, with the Japanese, beauty is as much a thing of form as of color, and is a term applied not to a part but the whole of an object admired. Plums are dwarfed for potting,

grafted with different colors, until a mature tree is attained ten inches in height, displaying white, pink and red blossoms beautifully mingled. In the place of honor such a tree often adorns the guest room of a wealthy home. In the lyric verse of the people, as in art, the plum figures largely, and is associated with the nightingale, musical in the season of its blooming. As seen by moonlight, while the faint perfume floats upon the soft, silvery air, the effect is enchanting.

"In spring time, on a cloudless night
When moonbeams throw their silver pall
O'er wooded landscape, shrouding all
In one soft cloud of misty white,
I'm vain, almost, to hope to trace
The plum trees in their lovely bloom
Of argent. 'Tis their sweet perfume
Alone which leads me to their place."

Following the plum in the order of the season comes the cherry, in its glory through a few days of April. This, rather than the chrysanthemum, is Japan's national flower. Though it blooms not on the Imperial crest, it blooms in the hearts of the people; and by Emperor and coolie alike is deemed the flower royal. It is planted singly and in groves, in gardens and about temples, along the highway for miles, and upon the banks of streams. Hillsides burst into glory with masses of its bloom against backgrounds of pine.

The flowering of the cherry is the call for a universal holiday, when the temple gardens are thronged by day and night; and the famous hillsides made alive with festal crowds. Even private grounds, the Japanese gentleman's holy of holies, are thrown open if they possess a noted cherry, for such wealth of divine beauty is not given for one alone, but is a gift of the gods to all mankind. A few miles from Kyoto is a steep hill called Arashiyama. To increase the natural beauty of the place an emperor, hundreds of years ago, planted cherry trees amid its groves of maple and pine. About its floor flows a little river; and there in the springtime come thousands that they may float upon the waters and look up to the blossoms that like clouds rest on the slopes of the mountain.

In Maruyama Park is a famous cherry called the "night cherry of Gion," because to behold its beauty by the light of flaming torches the city literally encamps about its feet. I have been there at seven o'clock in the evening; I have been there at midnight; and the wierd spell held the thousands with an influence no Westerner can comprehend. The tree stands on rising ground surrounded by a park. It is old; and its branches are supported by a score of poles. To us it has no beauty; yet to the people of Kyoto it is dear; and in the springtime even we must gaze in wonder at the mass of white that flows over its bending branches as a veil of glory. Beneath it the ground is carpeted with ermine; and in the glow of the evening lights a wild enchantment seems to issue from its ancient form. Far as the eye can reach mats are spread. Men, women and children, in family groups, in larger parties, sit in social enjoyment through all the evening hours and far toward morning, held by the object to which all faces turn. Here an aged man in silence sits dreaming of other nights beneath the shadow of that tree, and worships a distant past. The dead are here tonight.

Not to the flowering trees alone do the Japanese give their affection. The country is rich in cone-bearers, of which the Hinoki is most valuable. It rises to great height, with unbranched trunk. Sacred to disciples of Shinto faith, it is planted near the Shinto temples; and from its timber, straight-grained, light and strong, their shrines are made. More common than the Hinoki is the Sugi or Cryptomeria, universally used, having no rival in the world perhaps, but the Sequoias of California. About the famous temples at Nikko are mighty groves of this tree, forming for me the chief beauty of the place. Along the old imperial highways their lines extend for miles, blending beauty and grandeur, and speaking of that past when beneath their branches trod the retinue of Dymio and Prince.

Pines are in abundance, but of little value for timber. Some are mighty monarchs famed for historic associations. Upon the shore of Lake Biwa is a pine over 1,200 years old. The circumference of its trunk is over twenty-five feet, and its branches

cover an area of three-fourths of an acre. The height is not great, only about forty feet, and the limbs turning downward are supported by wooden posts. Great holes in the trunk are filled with plaster, and many of the larger branches are completely roofed, to protect them from the storm and sun. We are more familiar with the dwarfed forms, many of which have been imported to this country and sold at fabulous prices. A tree of only a few inches may be a hundred years old with every characteristic of its great age except that of size. Japanese gardeners are very skilful in training these trees, both large and small. In a temple garden familiar to me is a junk under full sail. Its hull and rigging are perfect; and all formed of the limbs and leaves of a living tree. That tree is tended even to the care of each individual needle, while its branches and smallest twigs are held to the desired form by bamboo rods.

In connection with the trees of Japan, I ought to mention that growth of universal use, the bamboo, a tree in size and strength yet in truth a grass of the field. About the word "bamboo" might be written the daily life of the people. The mountain sides and the forest floors are covered with bamboo grass from three to six feet high, making traveling impossible save by well-beaten paths. Every village has its grove of bamboo trees growing in smooth glossy splendor fifty and sixty feet high, waving their feathery tops in each breath of the breeze. The mature stalks are used in a thousand ways, from the building of a house to the making of an umbrella, while the young sprouts are cultivated for food. As an object of beauty the bamboo, whether singly or in a grove, is a delight to the eye. A few years ago the Emperor gave forth as the subject for poetic contemplation and composition, snow on the bamboo; and truly no more beautiful sight can be imagined. We of New England know well the beauty of the graceful birches as, snow-laden, they bend by our country roadsides. In place of their silvery trunks and leafless twigs, scarcely seen in the mantle of snow, picture the sheen of the bamboo's pure green and the quivering grace of its finger-like leaves playing hide and seek in the snow.

In passing from the tree growths, I wish to mention one vine, true tree-lover, the wisteria, so familiar to us all. It blooms in May, following the cherry, and with a luxuriance we never behold in this country. Trained on trellises, a single plant will cover an immense area; and wild in the groves near the temples of Nara its pendent bloom-clusters, over a foot long, wave from the top of sixty-foot trees. In double white as well as purple blooms, its floral offering is both royal and spotlessly pure.

Following the wisteria blooms the iris, and then the peony, both admired, as, in spite of difficulties, they are now becoming well-known in our gardens.

The flower of autumn is the chrysanthemum, ennobled in the Imperial Crest, yet democratic as our own wayside daisy in the lavishness of its manifold beauty. There is little occasion for me to speak at length of the chrysanthemum in a land which has so fully adopted it. Under the care of our gardeners it has attained a development unsurpassed if equalled in the land of its nativity. Tasts may differ, and some prefer the symmetrical perfection of our dense blooms, while others may regard more highly the artistic grace of the plant with lighter flowers. In the one, the American culturist has surpassed his teacher, for his love has led him where the other's desire would never lead. The Japanese does not so much regard the beauty of blossom, which may be enjoyed apart from the plant, but rather esteems that completeness which makes stalk, leaf and bloom one artistic perfection.

You all know the story of the chrysanthemum's introduction, how Joseph Neesima, the Japanese runaway, exile, scholar, hero, Christian educator, gave a few plants to the wife of his benefactor, Mrs. Alpheus Hardy; how by her they were intrusted to the care of a florist; and how they aroused the interest that to this day increases with each succeeding year.

We have our chrysanthemum shows. Many of them surpass what might be seen in Japan. Yet there are features of Japanese exhibits that may have a novel interest. Apart from private collections, emphasizing this or that phase of the culture accord-

ing to the owner's taste, there is the Imperial Chrysanthemum Party, as much a social function as a flower display. In various exhibits wonderful masses of bloom are seen, and marvelous individual plants, so trained that when in flower they perfectly represent forms of beasts, of architecture, or natural scenery. Street displays are common, where for half a mile the sides of the street are banked with plants in bloom, their roots carefully bound in straw, and all for sale at prices that to us seem ridiculously small. Three cents will secure a chrysanthemum tree of perfect symmetry, spreading from a trunk eight or ten inches high into a mass of branches bearing thousands of dainty blossoms; or the same sum will buy its neighbor plant, a graceful, slender twin-stalk with bending heads of tangled hair rich in color as the golden sun.

The Japanese find no difficulty in moving living plants, be they large or small. The roots are gathered in a compact ball and wound with straw, thus suffering transportation without apparent injury. These chrysanthemums in full bloom are carried in carts, handled with apparent carelessness and yet remain unwilted. So with trees. A common sight in the park of the old imperial palace is the moving of trees from place to place, their roots cut and bound in like manner and receiving as little injury. To account in part for this skill, acquired by long experience, it may be said that the trees planted in the ground do not become a part of the estate, but remain the owner's personal property, to be removed by him, if, having rented a house, he now desires to move to another.

Every Japanese is to some extent a skilled gardener; and in this connection I wish to speak of their mode of culture. In the first place, they care but little for what we call cut-flowers. Hence their culture is rather of trees and flowering shrubs, of plants to be admired as they grow or which yield themselves to their peculiar style of flower-arrangement, than of such as find their chief beauty in the bloom alone. A Japanese garden is a thing of wonder. It is a work of highest art, yet in utmost harmony with nature. A firmly fixed body of conventions govern the gardener's efforts. The scenery of the country is

idealized to make certain features prominent; but the design is always self-consistent, and expressive of some idea or sentiment. A depth of philosophy underlies every arrangement and ministers to an inner sense in the beholder. Though much may be included in a small area,—a mountain, with its torrent flowing from an island-studded lake whose shores are lined with forest on one side and low iris-fields on the other; a summer-house from which to view the scene; winding walks and shady groves—there is no over-crowding, no sense of confusion. There is perfect obedience to the laws of propriety and proportion. The lotus may bloom in the marshes, the maple illumine the hillside; but by suggestion rather than mass do they give the impression of greatness. There is studied avoidance of the strange, the incongruous, the inharmonious. Collections rare and wonderful are of interest; the grotesque is peculiar in its appeal to the Japanese mind; yet these are not the ideals of the garden. The garden is the sanctum sanctorum; and should harmonize not only with its own philosophy, but also with its owner's soul. It is not primarily for public display or social entertainment, but for private and personal enjoyment. As the "den" to the student and man of letters, as the studio to the devotee of art, so is the garden to the soul of its owner. It is never seen from the street; but, being entered usually through the house, it is the most retired of the master's possessions.

Together let us visit such a garden. Its beauty we may only half appreciate; but our friend will patiently listen to our misdirected praise and courteously guide our attention to that which is worthy of note. We will imagine that we have passed through the preliminaries of reception within the house, the tea-drinking and the pleasantries of polite conversation, and have stepped from the parlor to the stone walk of the garden. Its sanded surface is spotlessly clean. No leaves or fallen twigs disfigure the path. With three steps we ascend the mountain promontory which overlooks the scene. Here we sit down and behold a wide reach of country. At our feet is a placid lake, which in a merry stream flows away at

our right beneath an overhanging pine, whose ancient branches span the channel, bridging it from shore to shore, and casting dancing shadows o'er the edge of the meadow, where the iris is in full bloom. Off to the left is an island, densely wooded with pine, amid which may be seen the graceful forms of the cherry, which in the earlier months made it a bower of beauty. Away in the distance, at the upper end of the lake, may be caught the gleam of the boulders, over which the mountain torrent rushes to the calm waters of the lake. They are deeply worn, and have been quaintly hurled from the higher ledges by the force of the water, which, far above, issues through a broken wall of native rock. We can almost hear the roar of the falling water; and surely that is the lap of the waves, lifting the lily-pads floating by the nearer shore,—or is it the gurgle of the laughing stream, mockingly playing hide-and-seek amid the stones and shrubs that half conceal the bed in which it runs to slumber? We cannot tell; and yet, a word,—there is no drop of water in all this scene, save what, in buried tanks, holds life for the roots of the iris and lily growing by the banks. The lake of glistening sand, the island with its cluster of dwarf pine, the mountain with its rocky gorge and open cleft, the floating lily-pads, the blooming iris,—all are here; and make a scene in which the soul delights and to which the soul gives soul.

"Spake full well, in language quaint and olden,
One who dwelleth by the castled Rhine,
When he called the flowers, so blue and golden,
Stars, that in earth's firmament do shine.

Stars they are, wherein we read our history,
As astrologers and seers of eld;
Yet not wrapped about with awful mystery,
Like the burning stars, which they beheld."

All people of any fineness of culture have found in flowers, as in the stars, appropriate symbols of elevated thoughts. To the boor, the primrose by the river's brim may be only a primrose; but to the poet it becomes transfused with a meaning which is difficult to express in a language less refined. To the Japanese flowers have a language difficult for us to com-

prehend, as are the marvels of their spoken tongue. In the first place, in the use of flowers, as in the planning of a garden, there must be propriety and fitness. A flower out of season is unnatural and hence objectionable. The hothouse for forced culture is a thing by them unknown and undesired. An arrangement of flowers that would not occur in nature is in poor taste; and an arrangement that does not in some way suggest the natural is equally inappropriate. Thus special vases are often used for special flowers, that by their form and structure they may enhance the naturalness of the effect and suggest an entire landscape to the imagination. Massing is seldom allowed. A single spray is often more effective than a crowded cluster; and its charm consists not so much in beauty of blossom as in beauty of form, suggesting to the sympathetic soul much that is hidden from our duller sense. A gnarled and knotted tree trunk, bereft of branches, may for some reason by them appreciated be a thing of beauty and of joy. So the untrimmed limb of the forest may, in the costly vase of the parlor, suggest a beauty and charm native to itself alone.

None but one trained in the art of Japanese flower-arrangement should attempt to speak in detail; none but one moved by the inherited philosophy of that Orient race should undertake an interpretation of that which is with them a liberal art, the fit employment of literati, embodying much of their esoteric faith.

In painting and in verse the language of flowers and trees is an element of enrichment and beauty; and with the translation (by a professor of the Tokyo University), of a famous Tanka, I will conclude my lecture, thanking you for your gracious attention:

> Thou plum tree of common growth,
> Beneath thy spreading leaves
> The air of reverence breathes still.
> Were't not for the noble exile
> Would thy leaves be regarded to-day?
> Oh, the sainted no more's to be seen,
> But the plum tree that once was his pride.

And in the words of another floral verse:—

> May thy fame flourish as the firs,
> Prospering in the forest of everlasting green.

28th January, A. D. 1904.

LECTURE

BY

F. A. WAUGH,

HORTICULTURIST, MASSACHUSETTS AGRICULTURAL COLLEGE.

Theme:—Stock and Scion or some Facts and Theories about Grafting.

He spoke of experiments which have been made at the College to ascertain the best methods of grafting. Until a few years ago the impression among horticulturists was that, while the scion had a strong influence on the stock, the stock had little or no influence on the scion. Nothing could be further from the truth, for recent experiments have shown that in order to produce the best results as much attention should be given to the stock as the scion. The principle is the same as governs stock breeding.

He told of results obtained by grafting the peach on its own root, plum on the peach, and plum on three varieties of plum, one American and two European varieties. In this connection he explained how to get the earliest, latest, best keeping and most beautiful fruits. He advocated the dwarfing of trees, so that they might be within easy reach of the sprayer, particularly those which are troubled with San José scale.

In Vermont there had been numerous experiments made by grafting McIntosh scions on crab apple stock, resulting in a remarkable improvement of the McIntosh, the fruit ripening two or three weeks later than on common stock, fruit of superior quality and keeping much longer.

Discussion followed. The principal speakers were, O. B. Hadwen, James Draper, Arthur J. Marble, S. H. Record, S. B. Parsons, A. A. Hixon. This was a very interesting and instructive lecture. Prof. Waugh spoke without notes, and declined at a later date to write it out.

A. A. HIXON.

4th February, A. D. 1904.

LECTURE

Illustrated by Stereopticon.

BY

Miss EMMA G. CUMMINGS, Brookline.

Theme:—Characteristics of Some Southern Trees.

The people of Virginia must have been fond of planting willows, and their fresh, feathery green leaves, expanding so early, are an attractive feature of the cities and towns. The woodlands are dotted with the deep pink blossoms of the Judas trees; combined with the green of the willows it forms a very pleasing picture. The rhododendron, kalmia or mountain laurel clothe many a slope of the southern Alleghanies with green, shining leaves, and along the river banks the rhododendrons often make impenetrable thickets. There is a great variety of the broad-leaved evergreens, like the magnolia, holly, live oak and palmetto.

Magnolia fœtida has been freely planted in the parks and gardens of Washington, and from there southward is a prominent decorative feature of the cities, and conspicuous in the forest.

Fine old trees of live oak (*Quercus Virginiana*) are growing in Fortress Monroe, and they entirely compose the park along the water-front in Charleston. The trunks usually divide a few feet from the ground and form many wide-spreading branches, often from one hundred to one hundred and fifty feet across.

In the early part of the last century the United States government bought in the Gulf States large tracts of land covered with live oak, because the wood was regarded as especially

adapted to ship-building; and large quantities of it were used in the construction of warships before the substitution of iron. Since the Civil War the reservations have been neglected, and occupied by people who cleared the ground for planting. In 1895 all the reservations, except those in Florida, were transferred from the Navy to the Interior Department and opened to the public.

The Sabel palmetto, which makes the traveler feel at a glance that he is approaching the tropics, grows singly or in groups in the sandy soil of the islands and along the coast of South Carolina to Florida, but seldom grows more than thirty or forty feet high.

The leafstalk is connected with the trunk by a series of threads or fibres. These descend in curves through the whole trunk of the tree, a structure peculiar to palms, interlacing with fibres from the other leaves in such manner as to produce great resisting power.

In May, 1777, the soldiers under Captain Moultrie were obliged hurriedly to construct a fort to protect themselves from an attack by the British fleet. For this purpose they used the trees that were growing on the shore, and the balls of the enemy either passed over or lodged in the spongy wood. Thus the small garrison within were enabled to repulse the foe. To commemorate this event, the state seal shows an oak without branches, at the foot of an upright palmetto, signifying the victory of the palm over the oaken British fleet. Ever since then South Carolina has been known as the Palmetto State.

It is commonly called cabbage palmetto because the growing tips are cut off and eaten as a vegetable by the negroes. From three to four feet of the top are taken off, and after removing from the centre the tender young leaves, the remainder is boiled, shredded by machinery and made into scrubbing brushes. A factory in Jacksonville has converted as many as 7,500 of these buds into scrubbing brushes in a single week. The leaves serve as a thatch covering for roofs; are made into hats, mats, fans and baskets; also used for green on Palm Sunday. One Boston firm receives 200,000 leaves annually.

Pinehurst, the well known health resort in North Carolina, is built among pines. There are three species, one with short leaves growing in clusters of two, *Pinus echinata*, is of wide distribution and found from southern New York to Texas. The other two species are long-leaved and grow in clusters of three. The *Pinus tæda* has leaves from six to ten inches long and with innumerable cones. *Pinus palustris* is larger and longer leaved, and commercially the most valuable of the three. They grow tall and straight with no low limbs and the long dark green leaves form dense tufts at the ends of the branches.

A fourth species of pine, growing from South Carolina southward, is the Cuban. This so closely resembles the long-leaved, from which formerly it was not distinguished, that it is often cut and sold under that name.

The largest forests used to be in Georgia, and they have been practically exhausted by tapping the trees for turpentine, and cutting for the lumber market. The government reports state, that in 1890, there were eighty-eight lumber mills in Georgia sawing exclusively long-leaved pine timber.

The seedlings of the long-leaved pine look like little tufts of grass and grow but little in height for several years, giving most of their nourishment to the development of a root system, by which they are better prepared to live in soil where the water supply is scanty.

A plant two years old is not more than one and a half inches high, while the tap-root is often two or three feet long. The slow upward growth continues until the plant is about seven years old and as many inches high, when its period of most vigorous growth begins, and it doubles its height in a year.

Great quantities of these trees are cut every winter and sent to our northern markets for decoration. The leaves remain green a long time, and put in flower pots they look like growing plants and are used extensively for church decoration.

The largest forest of this species to be seen in North Carolina, is known as Ray's Forest and covers an area of 2,300 acres, where formerly it covered about 15,000 square miles.

Here and there through these trees we came upon a few deciduous trees, such as buttonwood (*Platanus occidentalis*), red maple (*Acer rubrum*), and the blackjack (*Quercus Marilandica*), and the willow oak (*Q. laurifolia*). There are also occasional patches of low, swampy ground where grow *Magnolia glauca* and *Leucothoe*. Specimens of this last have been planted at the foot of Hemlock Hill in the Arnold Arboretum.

One of the important industries of the state is known as the Naval Stores Industry, probably because its products have been so extensively used for vessels and in ship yards. It consists in gathering the resinous substance from the trees and converting it into resin and spirits of turpentine. Tar is produced from dead wood and thoroughly seasoned stumps. These are gathered, put in a clay-lined pit, set on fire and loosely covered with earth. After nine days of slow burning tar begins to flow into a hole some three feet away, with which the crude oven is connected by an underground channel. The flow continues for several weeks. Pitch is obtained as a result of boiling down the tar.

The turpentine is obtained by removing the bark of a tree and cutting into the wood, when a liquid exudes in large quantities.

The trade in turpentine and the manufacture of tar and pitch were started in North Carolina by the first settlers; and in colonial times these products furnished the chief exports of the colony. In 1770 their value amounted to $215,000. In 1890 it had increased to more than eight million dollars ($8,135,339). This country has for many years supplied a large part of the world's demand for these substances, but the industry is doomed to destruction unless a different method is substituted.

A lumber company has established itself in Ray's Forest, with the intention of cutting down the trees as soon as the turpentine company has finished with them, having paid for the privilege at the rate of ten dollars an acre. Such land without the trees is of little value, often being sold for fifty cents an acre.

Fires due to various causes always have been and still are of frequent occurrence in these pine forests. Other causes of destruction to these pine forests are in the pasturage of cattle, who eat off the tops of the young trees; hogs are always allowed to roam at large through the South, and do much injury by digging up and eating the tender roots of the young plants; and squirrels pull the cones to pieces to get at the sweet seeds. It seems marvelous that under these adverse conditions any seedlings escape destruction, and more especially when the fields of burned stumps bear such evidence of continued fires.

Taxodium distichum, or bald cypress, is another conifer of great interest, not an evergreen, and grows along the low coast lands of the Southern States, sometimes following up the rivers for several miles. Unlike the long-leaved pine it needs a great deal of moisture and grows in wet, swampy soil that is often flooded for weeks at a time, so that the young plants are wholly covered with water. It must be a desirable condition, for the old trees grow to a large size. Fortunate it is that some trees prefer swamps and some the dry sandy plains, that both may be clothed with verdure.

We went through the Dismal Swamp canal to Drummond lake for the purpose of seeing the bald cypress trees. We left Elizabeth City in North Carolina on a canal boat; we found the first ten or fifteen miles of the route was on the Pasquotank river, which grew narrower as we ascended, until we were close to the banks on either side. The cypress trees were numerous and conspicuous, just coming into leaf. Some trees were reddish-brown and some yellowish-green in color. In contrast with this delicate green were the brilliant colored keys of the red maples, everywhere abundant through the woods.

We entered the canal, which stretched out before us in a nearly straight line for twenty-two miles. Recent dredging of the canal had drawn away the water in adjacent lands from the roots of the trees and their bare branches testified that hundreds of them had been killed. The mud had been deposited upon the banks, making them very unsightly. In some places

they were covered with plants, conspicuous among which was the *Gelsemium*, commonly called yellow jessamine. From time to time we passed small settlements, and occasionally large farms.

About midway of the canal a small side canal, its banks covered with a growth of horsebriar and wild roses, leads to Drummond lake, which is off the direct route and has no regular communication with it. Altogether the visit was a disappointment because the wind was blowing a hurricane and it was not considered safe to go out on the lake; and second because there was no chance to see the peculiar cypress characteristics. As far as we could see along the shore most of the trees appear to be dead, due to the lowering of the water.

We saw some of these trees to much better advantage on the James river, and also while driving near Suffolk, coming unexpectedly upon them as they stood in the water on the borders of a small stream. The two forms of growth which this tree assumes were quite noticeable,—the erect pyramidal form, common to young trees; and the broad summit, often one hundred feet across, and rounded outline of older trees, which generally lose their lower branches, the upper ones curving slightly downward. Where a tree stands alone or a few grow together in cultivation they show the pyramidal form, like the group in Central Park, New York.

They have also two forms of leaves, the one pressed close to the branch, the other standing at right angles from it. They may appear on the same or on different branches of the same tree, or on separate trees. Trees with both forms of leaves are growing side by side at the Arnold Arboretum. The foliage is very delicate and fern-like and its beauty makes the trees desirable for cultivation.

One of the peculiarities of the bald cypress is the enlarged trunk near the base, where it slopes outward, looking like an inverted vase; but the most striking characteristic is a series of projections from the roots, known as cypress knees, an arrangement, so it is thought, for supplying them with air; and as water often covers the ground around the trees to the

depth of several feet, the roots, of course, must have air. This is conveyed through the hollow projections which grow on the roots and rise at least high enough to be above the usual high-water mark. If the water rises so high as to cover these for many weeks, the trees die.

This is the generally accepted theory of the knees, still they have been a matter of speculation to the botanists. Michaux writes, "no cause can be assigned for their existence." Dr. Gray writes, "the use to the trees of the knees is unknown." Some authorities believe that their purpose is to strengthen the root system. Mr. Lamborn writes, "I am convinced that the most important function of the cypress knee is to stiffen and strengthen the root, in order that a great tree may anchor itself safely in a yielding material. When the trees grow in firm ground or where the roots can obtain a hold in the ordinary way knees seldom if ever develop."

The wood of the cypress is very valuable for lumber, being used for a great variety of purposes, and varying in color with different localities. In the last twenty years it has largely taken the place of white pine, which has become more and more scarce in the market. In the vicinity of the Gulf of Mexico, the largest trees are found.

No other trees grow surrounded by so much water, and for centuries they have stood in marshes, apparently undisturbed by storm or flood. On the Ashley river, near Charleston, *Tillandria*, or southern moss, grows upon its branches. This plant loves moisture and in the damp woods of the South often veils these trees with its abundant growth.

As we left the lowlands for the mountainous district we found coniferous trees fewer and the deciduous trees more and more apparent. Red birches (*Betula nigra*) grow along the banks of the Swananoa river at Biltmore, where they attain great size. These trees are estimated to be one hundred and fifty years old or more. Beneath their shade along the banks grows a tall reed or cane, resembling bamboo.

A short distance from Biltmore, the estate of W. K. Vanderbilt, we saw the Carolina hemlock (*Tsuga Caroliniana*), and

the dark slopes of the high mountains, we learned, were covered with Fraser's fir (*Abies Fraseri*). Both are found only in this vicinity. The botanists at Biltmore think the mountains of North and South Carolina the most interesting botanical region on the Atlantic coast, because of the great variety of species native to that region.

We saw many traces of fire and flood, especially on the French Broad river in the western part of North Carolina. In Virginia these conditions are even more noticeable, where the hillsides are strewn with burned or partially decayed timber.

It was in the mountains of South Carolina that we saw the largest and finest trees. Leaving the railroad at Seneca we drove twenty-five miles up a river valley, where we went for the purpose of seeing that most interesting American flower, *Shortia galacifolia*,—little coltsfoot, the natives of Jocasse valley call it.

At first our route lay over a stretch of country where dead pine trees stood in various stages of decay. The settlers girdled them for the purpose of clearing their land that they might plant corn and cotton. We passed through many such fields until we came to a growth of hardwood, oak predominating, with mistletoe growing upon its boughs.

Our guide, learning of our interest in trees, offered to show us some exceptional ones. It proved to be a day's tramp there and back from the valley, but we felt well repaid for all our trouble in crossing streams and climbing through rhododendron thickets, until we finally came to the big timber. We saw chestnut trees (*Castanea dentata*) fourteen feet in circumference; tulip (*Liriodendron tulipifera*) more than sixteen and a half feet in circumference, five feet from the ground, a liquidambar or sweet gum (*Liquidambar styraciflua*) nine feet, sending its straight trunk into the air for one hundred and thirty feet, with at least seventy-five feet clear of branches. It is said there are over a hundred varieties of trees in these mountains. There were black walnut, black birch, ash, persimmon, hemlock and pines. The reason why so much virgin

timber remains untouched is because of the long distance from a market.

It was a satisfaction to see trees that were not in any way contributing to the demands of commerce, and I might add one word more and say that it was just this fact that gave them a special interest.

Best of all, the ground beneath our feet was carpeted with the shining evergreen leaves of *Shortia*. A sight of this beautiful flower in bloom in its native habitat, was the crowning feature of our trip, and gave an added zest to the interesting story of its rediscovery in this country, after having been lost to scientists from the time of Michaux' visit to America in 1785, to the latter part of the last century, a period of nearly a hundred years. I will conclude, hoping I have been able to convey to you some of the interest and enthusiasm I felt myself in these trees, and perhaps to excite a longing to see for yourself some of the wonders of our southern forests.

(Miss Cummings had numerous slides showing pictures of many of the trees and plants mentioned, as well as views of interesting southern scenery.)

11th February, A. D. 1904.

ESSAY

BY

Mrs. ABEL F. STEVENS, Wellesley, Mass.

Theme:—The Adornment of Our Rural Homes.

It is a subject that lies near my heart; and is yearly taking stronger hold on my affections. From my earliest years I cannot remember the time when I did not love the cultivation of plants and trees. And the more I am brought into communion with nature, the more I am filled with gratitude to the giver of all good, that he gave me a love for fruits and flowers, and cast my lot where I might enjoy them, and have sweet intercourse with these beautiful objects of creation. And who does not look with wonder and admiration upon the infinite beauty and perfection of these works of the "Hand Divine": the enamelled blossoms bespangling the orchards with starry spray, scarcely less numerous than the glittering hosts above, dancing in rainbow hues and flinging on the breeze a fragrance richer than Ceylon's Isles,—sweet harbinger of a bountiful harvest; the luscious fruits, God's best gift to man—save woman; the velvet peach mantled with beauty's softest blush, and vieing with the orieney of the morning; the delicious plum veiled with silvery bloom over robes of purple or cloth of gold; the royal purple and brilliant cherry; the melting pear; and the burnished apple,—tempting human taste from the mother of our race to her last fair daughter! But what pen can sketch the changing hues, the magnificence and glory, when "Pomona" pours from her ever-flowing lap the varied treasures of the ripening year! Here are creations originally pronounced very good; here beauties which fade only to re-

appear again. From the beginning there seems to have been an intimate connection between trees and man. Trees are spoken of as though man could not live without them, as though divine beneficence had given them to us as companions for life, and as emblems of all that is beautiful in imagery, excellent in character or hopeful in destiny.

Our trees, from the opening bud to the golden harvest, from the laying off of their autumnal livery, and during their winter's shroud—waiting a resurrection to a new and superior life—are all eloquent preachers, proclaiming to our inmost soul, "The hand that made us is divine."

God gave us trees adorned with inimitable beauty, pleasant to the sight and good for food. He gave us also natural and instinctive love for them.

Witness the love of Abraham, desiring to have all the trees in the field; of Rousseau, longing to be laid under his own selected trees; of Temple, directing that his heart should be buried beneath the trees of his own planting; of Washington, returning to the cherished groves of "Mt. Vernon"; of Webster, reclining in life and sleeping in death beneath the umbrageous elms of Marshfield; of Marshall P. Wilder, who said, "When delicious fruits and fragrant flowers shall no longer cherish and cheer me consign my dust to mother earth, and for a head-stone plant a tree!" Of the lamented Downing, father of American Pomology, whose genius lives in trees which adorn many a lovely landscape, many a beautiful garden and many a fruitful orchard in our own dear land.

From the day when God gave our father in Eden trees "pleasant to our sight and good for food," down to Solomon, who said, "I made me gardens and orchards, and I planted in them of all kinds of fruits," and through the successive generations of men, the cultivation of trees and plants have been the criterion of taste and refinement! No object of attachment is more naturally allied to the instincts of the soul. And truly did Emerson remark, "He who knows the most, and what sweets and virtues are in the ground, and how to come at these enchantments, is the rich and royal man." And

what greater benefactions can you have for posterity than these memorials, which shall live and grow, which shall tell of your love of the most beautiful works of nature, kindred and home, when you are slumbering in the grave? Far better these, for the perpetuation of your memory, and the benefit of the advancing millions of coming time, than all the monumental shafts and pillars of polished marble that ever graced a hero's tomb!

Let every town and hamlet in our land have its "Improvement Society." Let the planting of trees, shrubs and trailing vines become universal. "Let the rough places be made smooth, the crooked straight, and the desert to bud and bloom as the rose." The art of landscape gardening is one that should be cultivated by all lovers of nature, for every opportunity is at hand, and kind nature has been so lavish in her gifts to the flora of our country, that by a systematic method we can adorn and embellish our grounds, avenues and streets, our public parks and the old town commons. Every native citizen of our dear old New England should be so public spirited as to devote our annual "Arbor Day" to beautifying the land of their birth, and to adorn their homes, as it is a fitting employment for a patriotic and home-loving people! And I commend most heartily that the day be observed by all the people who love, enjoy and appreciate rural life, by the setting out of trees, shrubs and vines, for the adornment of public grounds and private places, that will in all coming time be the pride and joy of its inhabitants. So all shall be impressed with the beneficial results from a general observation of the day. Indeed we would make it universal, so that the waste tracts might be reclothed with verdure and forest growth, and culture be promoted, as well as the homes planted with flowers, and our waysides made beautiful. For the canopied shade of the majestic elms, and the autumnal splendor of the beautiful maples, that constitute the glory of our rural towns, we owe to the generous foresight of our fathers! In country roads and city streets, let us make equally liberal provision for those who shall follow us; so with each passing generation,

will the state grow in beauty and charm, not less in virtue and enlightenment!

A taste for rural improvements is advancing with great rapidity in our nation. This is evident from the immense number of trees and shrubs that are yearly planted in all private and public grounds, upon the avenues and streets of small towns and large villages and suburban cities. For such we rejoice to see so much enterprise and taste, so much ambition and love of home adornment; and we are unwilling to rest quite without the association, comfort and enjoyment in all ways derived from cooling shades and fragrant flowers, and singing birds.

What does he plant—who plants a tree?
He plants a friend of sun and sky:
He plants a flag of breezes free;
The shaft of beauty towering high.
He plants a home to Heaven anigh.
For song and mother croon of bird
In hushed and happy twilight heard,
The treble of Heaven's harmonie.
These things he plants, who plants a tree.
What does he plant—who plants a tree?
He plants cool shade and tender rain
And seed and bud of days to be
And years that fade and flush again.
He plants the glory of the plain.
He plants the forest's heritage
The harvest of a coming age.
These things he plants, who plants a tree.
What does he plant, who plants a tree?
He plants in sap and leaf and wood
In love of home and loyalty
And far-cast thought of civic good
His blessing on the neighborhood.
Who in the hollow of His hand
Holds all the growth of all our land.
A nation's growth from sea to sea
Stirs in his heart who plants a tree!

The laws of nature should be secrets to none, and he that has a knowledge of any important discovery in horticultural process should gladly impart it to others. The results of all experiments should be noted down and this experience given

to our associates; for it is by the constant interchange of facts, derived by experience, that we owe much of our progress in horticulture. Let the cultivators of the soil give our art more attention, and promote this interesting and benevolent employment. To my mind, the production of delicious fruits and fragrant flowers is only the promise of a healthier race, of happier homes and a higher and nobler civilization! A tree is the noblest monument of any generation.

WITHOUT WORDS.

As without words the roses scent the bower;
As without words the dial points the hour;
As without words the stream the water wheel
Turns o'er and o'er, and grinds the luscious meal;
So without words the gallant grove, with shade,
Enrobes the knoll and skirts the sunny glade,
Providing thus, against excessive heat,
For men and beasts a cool, a safe retreat.

LANDSCAPE GARDENING.

The value of everything that approaches the beautiful is enhanced by an appropriate setting. Even the most beautiful flower of nature is improved by its surroundings of delicately tinted green foliage. The artist, when exhibiting his most perfect artificial representation of nature, places it, if possible, with a surrounding which will measurably attract the eye, and yet cast upon the picture an enhanced breadth and height of coloring, combined with the softness which nature, in her hazy moods, gives to all her productions.

The art of composition embraced in landscape gardening has certain principles which go towards forming a unity of the whole, and from which no deviation can be made without marring the result. Taste may be possessed in a greater or less degree, but without reference to principles it will fail to create a design of harmonious association. In the past too little attention has been given to the proper arrangements of trees, shrubs and flowers in the decoration of our homes. But every American citizen should have sufficient love for his home, and be imbued with a spirit of independence, a pride

and love for the creation of one's own, to make every improvement possible for the embellishment of his home.

From years of close study and practical knowledge as to the character of trees and plants,—the requisites of planting or arranging them for a harmonious effect,—we say there is a common error in ornamental gardening, viz.: that of promiscuously mixing of herbaceous plants with shrubs and trees, by which neither can thrive properly, and the effect of the one is injured by that of the other. For however pleasing and picturesque it may be in the natural woods, yet this kind of beauty is totally unsuited in landscape art, for it destroys unity and effect by crowding of varieties incongruously together.

In every small garden, or more commodious grounds, always have some leading feature—such as foliage trees, ornamental shrubs or flowering plants; also the creating of a flower garden proper, a water fountain, or rockery for plants. But in the constructing of all these permanent and beautiful ornaments, let them harmonize with the surrounding grounds. Let no harsh lines be left to break the smoothness and harmony of blending from the lawn to the flower beds or walks,—ever remembering the softness of nature's own laws, which always resolve into one another without any offending feature. In the preparation of the grounds let the soil be trenched deeply, by plowing or spading, keeping the surface soil always on top and thoroughly enriching it before planting.

LAWNS.

In all our rural walks the charm of every place is a beautiful lawn, and we will give practical direction for making, sowing and keeping them in their vernal beauty during the growing season. Let the ground be thoroughly prepared in April or August,—fully 18 inches deep of a good, rich, loamy soil, making the whole surface of uniform depth, and same quality; whether on a rising knoll, or a low level grade, enrich the soil with a mixture of 20 bushels wood ashes, 10 bushels bone meal, 2 bushels salt and 1 bushel of plaster per acre. Incorporate all these thoroughly with the soil; rake and pulverize

with the roller until all the surface is a fine seed bed. Then sow very evenly the following formula:—

2	bushels	Kentucky Blue Grass (*Poapratensis*).
2	"	Red Top (*Agrostis vulgaris*).
½	"	Creeping Bent (*Agrostis canina*).
¼	"	Sweet Vernal (*Anthoxanthum odoratum*).
¼	"	White Clover (*Trifolium repens*).

Five bushels of above mixture per acre, using this quantity in proportion to the area sown. In sowing, take one-half of the seed to be used, sowing it evenly over the whole surface from north to south; the other half and sow it from east to west; then rake in deep and well and finish with a heavy hand roller, going over the entire surface. If dry weather prevails sprinkle at sundown. Let the young grass get three to four inches high before cutting it the first time, after that cut it every ten days, give water in moderation as needed, for more fine lawns are ruined by over watering than for the lack of water. Annually in October apply a heavy dressing of wood ashes, and in April a light dressing of nitrate of soda.

Now with proper attention to cutting, watering, dressing and rolling you may have the most beautiful velvety lawn, so charming to the eye and the pride of its owner, and it should last for twenty years without renewing. Don't ruin the above beautiful lawn by continually drenching it with cold water, that kills out the above tender sweet grasses, and brings in the coarse, sallow, wiry water grass that is the ruination of so many fine lawns. Don't cover it in the fall with coarse odoriferous stable dressing full of weed seeds, to grow and injure the roots of the grasses. Don't play croquet, tennis, or games so injurious to the fine turf. A well kept lawn is the most attractive feature about our charming rural homes.

MY CONSERVATORY—ITS CARES AND PLEASURES.

No home of taste and refinement is considered complete at the present time without the conservatory. Though it may have its labors and difficulties, still the pleasures which it

affords can be but partly told, and the profit only in a measure disclosed. One's home may not be costly, and yet a small conservatory will transform that home into an Eden of flowers. How dreary and cold a home must be without the presence of these "Jewels of Nature." They give to all an air of peace and love; while without the earth may wear her mantle of white and nature look sober and sad, we have only to turn our gaze from the desolation spread over our mother earth to the cozy blossoming bower within, noting the contrast between cold, cheerless winter without, and bright, genial summer within. How they thrill our hearts with love for the beautiful! How we would like to pay our grateful thanks to them for the many hours of happiness they have bestowed upon us! In our conservatory we find many and great advantages; we find there a field for study which is of great interest and pleasure; the waiting and watching day by day for the leaves to unfold and the blossoms to send forth their exquisite fragrance, causing us to indulge in exclamations of delight and wonder, showing us they are associates in our bright and cheerful household. Thus we are taught to think of them as our companions, for they have the same wonderful thing as we,—called life. And so we learn to love them as we become acquainted with their sweet modest plant life. Conservatories of plants are educators of taste. How many windows we have seen that told us plainly of the fair hands that trained those draperies of green, and twined the clinging tendrils so artistically, till all was a labyrinth of symmetry and beauty, was one whose heart was filled with love for the beautiful. Flowers and plants, not only by their beauty and fragrance, teach us cheerfulness, purity and love, but they point us to the great designer and painter of the universe; they tell us of his wisdom and care, reaching to the smallest of his creatures. We can truly say "the hand that made them is divine."

We learn to cherish these floral treasures as they remind us of their companionship with us in hours of joy and happiness—in hours of sorrow and pain. They bloom upon the bridal altar, decking the brow of the blushing bride, kissing her cheeks

with their sweet scented breath; they grace the festive board; they are largely used to adorn the house of God,—and what more delicate offering can we give to him who has bestowed so much on us, than a tribute from his floral gems? From time immemorial flowers have been symbolical in religion: red, the symbol of divine love; white, of divine wisdom; yellow, of the relation of the love and wisdom of God; blue, of divine eternity and human immortality. If there is any adornment suitable for the house of God, it is in the use of the beautiful things of earth.

> " Bring flowers to the shrine, when we kneel in prayer.
> They are Nature's offering—their place is there,
> They speak of hope to the fainting heart,
> With a voice of comfort they come and part."

We would have flowers in every home. Even in some of the remotest places and conditions, may be found the rarest gems of earth; for you will find these blessings of sunshine on the window sill of the ranchman's cabin, in the little secluded cottage by the dusty roadside, and there in a discarded fruit can, down the lone and dingy street in the corner of a window, you catch a glimpse of something bright and cheerful. Stopping a moment your eye rests upon the delicate blossom of the heliotrope, trying to send its reviving influence through the stifling atmosphere that surrounds it.

How often in visiting a bereaved home we notice a beautiful fuchsia placed upon the window sill, guarded and watched with tender care, and we notice how often the mother's eye rests upon the brightly colored jewel blossoms, drooping downward, and seems to constantly remind her of the delight they gave her little child, before it was transplanted to its angel home.

FLOWERS.

Who would think that war, defeat and dispersion would have an effect on such simple things as flowers. Yet they did. The Roman Empire fell, and the Teutonic invasion swept away villa and garden and laid waste many a spot that had

been garlanded with bloom, and so many species of choice plants were lost, and had to be reintroduced. Now perhaps we wonder how they come again to the land that had been swept bare and desolate. It is a pretty story, as follows: The monks were early comers from the South, coming in little bands, and built their monasteries there, and horticulture revived by their efforts. Within the walls of every monastery was included a garden for vegetables, which was an important part of a monk's diet, it was as necessary as sleeping cells. They were skilled gardeners, and while they gave attention to the vegetable garden, the physic garden was well tended, and there grew blossoming plants as well as simple herbs. In times of war the monasteries were respected and the gardens grew apace, and before long flowers were again growing in profusion. In the court yards of the fortresses there was no room for these gems; hardly a blade of grass dared to show its head between the stones; but, by and by, times grew less fierce and then gardens were planted within the walls, and gradually they crept in different ways, until the air once more was laden with their sweetness and fragrance. With the Japanese, the word garden does not always signify a place where plants grow, it may be acres in extent or it may be encompassed by the walls of a tiny dish, it is always a product of art, and is always beautiful. They excel in this particular cult; the secret of their success is in their simplicity of treatment. In arranging flowers for decorative purposes harmony of color must be taken into consideration. I think the art and science of arranging flowers is not acquired, but is a gift bestowed on a person, to be able to make exquisite blendings of color to greet the eye, in fact, making a pleasing flower picture that will produce and receive rapt attention, is the happy possessor of a charming faculty. Another important feature is to guard against crowding, which not only hurts the flowers, but destroys the artistic and tasty effect. Take the rose for instance, it should depend upon its own foliage for greenery, and not mingled with climbing asparagus, smilax or ferns. It has an individuality of its own, and when grouped

with others loses its prestige and effect. In placing flowers upon the table, to form a picture of restfulness and charming attractiveness, bear in mind harmony of color, artistic arrangement and blending of form. And thus these gems in our floral kingdom will be more and more appreciated.

Make your homes beautiful, bring to it flowers,
Plant them around you to bud and to bloom,
They will give life to your loneliest hours,
They will bring light to enlighten the gloom.

Then shall it be when afar on life's billows
Where ever your tempest tossed children are flung,
They will sigh for the shade of the home weeping willows,
And sing the sweet songs, that their mother had sung.

Climbers. The climbing plants furnish us with nature's drapery, and nothing produced by art can equal their elegant grace—nothing is so effective and beautiful as these charming climbers; they surpass all, and give us our idea of beauty and refinement. Let the corners in our homes and the sides of our windows be covered under the delicate foliage of these beautiful vines.

CARE OF PLANTS.

Now we come to the daily care of our plants, and the essentials of successful cultivation. We must have proper soil, which is to become the food of the plant, the best for nearly all plants being decomposed soil, well enriched with one-fourth stable dressing. Thoroughly mix, and add to this potting soil one-fifth fresh ground bone—for the smaller plants sift it. Next in order we must have suitable flower pots. By far the best is the common earthern pot, new and clean from the pottery, unpainted or unglazed, with good drainage. Should your pots become infested with any earth worms, give them a good wetting of lime water in which is added a little spirits of ammonia, one tablespoonful to the quart. This will rid the soil of all insect life and give vigor to your plants.

Our next great point is the watering of our plants. How shall we water them? How often and how much? This depends entirely upon the conditions and growth of the plant.

No plant save the aquatic can flourish or flower from a sour or sodden soil, made so from over watering. More delicate plants are ruined by over watering—like our beautiful lawns—than by lack of water. When plants need watering give them a thorough soaking so the soil in the pot will be wet through. Rain water is the best, as it contains a small supply of ammonia and sulphur. Water at a temperature of 55° to 60° should be given at all times. No function in the growth of our plants is of greater importance to their welfare than intelligent watering. All aquatics, callas and rubbers require large quantities of water. Our charming ferns must have a moist atmosphere to develop their delicate fronds and exquisite foliage, from the beautiful maiden hair to the grand Bostonese fern with its two charming seedlings Piersonii and Annie Foster. Nothing in foliage gives a more striking and pleasing effect than these. For corners and canopies nothing equals the asparagus plumosa, with its delicate feathery foliage; and for hanging pots the asparagus sprengerii, with its vivid green foliage, makes our conservatory a bower of exquisite beauty. These gems of nature are admired by all, from the merry school children who loiter to gaze at them, to the busy housewife, who steals away from her weary labors, to tend carefully these objects of her affections.

INSECTS.

Now like our skins the leaves of plants are perforated with hundreds of minute pores, through which they breathe, exhaling oxygen, inhaling carbon. If these pores are filled up with dust the plant cannot perform these functions, and its life either ceases or stands still—it is impossible for it to grow or bloom. Frequent washing of the leaves is absolutely essential. In a window garden, when sweeping and dusting your rooms, throw newspapers or a light cloth over them. This will prevent the dust settling on the leaves. For close handling and washing, a soft sponge is of great service. The previous anxieties of the window garden are but light compared to the deadly warfare he is forced to wage against the insects which not only infest the plants, but the soil in which they grow

and bloom. The red spider is the most minute, yet the most dangerous foe, with which we have to contend, as they suck the juices from the leaves of the plants upon which they are allowed to remain. They increase very fast in a hot dry atmosphere. The leaves of the plants on the upper side grow brown and the plant loses its healthy appearance.

Moisture is sure death to this pest; clear water applied to the foliage on the under side and a frequent syringing freely in the morning before the sun is up, will drive away the intruders.

The Aphis or Green Fly is less to be dreaded than the red spider and is more easily seen. For window plants make a tunnel of stiff brown paper and burn tobacco stems on a shovel or iron pan. Then dip the plant in quite warm water to kill the eggs. In our conservatory we fumigate with tobacco stems in a cylinder stove, then syringe thoroughly with water. Thus by frequent fumigating and syringing not a aphis will be found.

Meal Bug, being a very annoying insect, coleus and smooth barked plants suffer especially from it. Alcohol is sure death. Apply it with five per cent. of water, either syringing or by a sponge. Kerosene emulsion is also effective.

Fresh water well applied, fresh air at proper times and cleanliness at all times, are the best preventives one can employ against the encroachments of these enemies to plant life.

HOME.

Home! is there a sweeter word in any language than that of home? What can bring brighter pictures of joy; what can give happier impressions on the mind; what can we treasure more tenderly than memories of home; and where in all the earth, can happier hearts be gathered but in the delightful precincts of home? Let it be our cordial pleasure, then, to give some useful encouragement to every lover of sweet, pure, tasteful home life, helping all to add to its attractions; to show them in many beautiful little ways, how to embellish its walls, improve every room with fancy ornaments, and even decorate the windows with charms of art and refined taste.

To my worthy sisters, true lovers of home decorations, and ardent admirers of every hint and tasteful suggestion, we present you these thoughts and offer our greeting, with the cordial wish that in every home here represented these suggestions may be the means to make them more beautiful, more enjoyable, happier and more heavenly—a true ideal New England home.

The beauties and attractions of the home can be none too pleasant or tasteful. Here gather the young to learn for all years to come. Here social life gains its lessons of utility and sense; and from this essay may all find a stimulus for new thoughts, more active work with pretty fancies, and æsthetic beauty to gild the days for years to come.

Bright moments shall still brighter glow
While home becomes our Heaven below.

No work is at once so refined and ennobling as that, which, by imitating the beautiful and lovely in nature, raises the human mind "up to nature's God." And of all beautiful things in nature, flowers, sweet flowers, are admitted to be of all things most lovely. I love all nature. Her secret ways, her mysteries, her beauties, her wonders, are all open to me. I can say I have got next to her heart and felt it throbbing.

No home of taste is now considered complete without its window garden, as it develops a taste for plant life and love for flowers. One of the advantages of window gardening is its simplicity—open to every one and impossible to none. Many persons confined to their houses for the greater part of their life have no larger estate than that which the window garden affords. They are educators of taste; they add brightness to our homes; and furnish food for pleasant thoughts. A single plant of ivy trained on the wall, or festooned over the window is a joy to all that look upon it. Among the most gratifying signs of the love of flowers, is the introduction of them into our school rooms. They impose a wholesome restraint upon the children; when tired with study, a few glances at the window sill and its pot of bloom wreathe their faces with smiles, and they willingly go to work again. Flowers

bring cheerfulness, purity and refinement. They are the spring of sunshine, a constant pleasure. We would have flowers in every home for their soul refreshing, heart inspiring and eye brightening influence.

Next to adorning our homes with these exquisite natural beauties comes the art to form their counterpart in wax and in oil in the most perfect manner, which is done most truthfully and lifelike that can be conceived, and as the contemplation of the beautiful is always interesting and instructive, so the art of copying or producing faithful imitations of the same, must tend to instruct and refine the taste and improve the mind of the operator; and it will be found that those persons constantly engaged in copying the lovely things scattered by a munificent creator through our woods and fields, will be ever on the watch for beautiful objects; this alone would be a high recommendation in favor of teaching and learning the art of forming the flowers and fruit of our own dear land, and then embellish our homes with these beautiful objects of nature.

In every home we should find the refining influence of good literature apparent. Let it not be as it was fifty years ago, a centre table adorned with books placed at exact distances, with the most rigid accuracy; but no home adornment is complete without a good array of choice books. Let it be the aim of all to secure a good library of the standard authors, poets and historians of our day. Be careful in your selections. Let them be only the very best of their class. We rejoice that the day of light, trashy reading is rapidly passing and the demand as rapidly growing for books of the purest tone of sentiment or song. We know of no greater factor for culture, enjoyment and true happiness in our homes than that derived from reading and study of the best books at our command. May this custom of reading circles increase in all of our societies.

To decorate properly we must blend different colors and shades, that they may appear in perfect harmony. It needs the hand and brain of the professional expert to make the most complete arrangements so it may produce the best effects. The idea of home decoration prevails among all classes of

society, from the highest to the lowest in all races of mankind—only second in importance to producing a fine picture, is the fact. When completed it should be placed where it will be seen to the best advantage.

All pictures of the same order of design should be placed together. Some works can be seen to advantage in a bright, and others in a subdued light; while others may lose nothing if placed above the line of sight and others gain rather than lose if hung much nearer the floor. It is suggested, that it is not desirable to put oil paintings in the same room with water colors, crayons or other like material; although frequently done, we consider it, from a point of artistic taste, a mistake. Never overcrowd the walls of any room with pictures; this is the very acme of poor taste.

As regards the furniture and carpet, decoration, tapestries, costly mirrors, rugs, etc., must depend upon the taste and means of the owner. If I could furnish a house to suit my own taste my preference would be for more expensive furniture and articles that are useful and ornamental also. Let every one arrange their own homes to suit themselves. Let love and contentment hold sway in the family circle; with these conditions prevailing, our homes will be to us the brightest place on earth.

No home is complete without its flower garden. These beautiful ornaments of nature—loved, cherished and almost worshipped by all people in all lands—are emblematic of:

> "Those gems of earth in which we see
> What Eden was—what Paradise will be."

A flower, by universal consent, is acknowledged to be so excellent in design and so lovely in endless variety of its form and color, that it has become a type of all earthly perfection and beauty. The ingenuity of man is exercised on the cultivation of flowers in all the civilized countries of the world. The love of flowers is one of the prevailing feelings implanted in the human mind. One of the earliest signs of delight in a child is called forth by the sight of flowers. In fact, it is a

sure token of progress in the comforts of civilized life, when flowers receive some share of attention. A cottage flower garden is one of the surest means of improving the conditions of the poor. It is an indication of industry and cheerfulness.

NEW ENGLAND.

I love New England's vine-clad hills,
Her thousand bright and gushing rills,
  Her sunshine and her storms;
Her rough and rugged rocks that rear
Their hoary heads high in the air
  In wild fantastic forms.

I love her rivers deep and wide
Those mighty streams that seaward glide,
  To seek the ocean's breast;
Her smiling fields, her flowering dales
Her shady dells, her pleasant vales,
  Abodes of peaceful rest.

I love her forests, dark and lone.
For there the wild bird's merry tone
  I hear from morn to night;
And lovelier flowers, are there I ween,
Than e'er in eastern lands were seen
  In varied colors bright.

Her forests and her valleys fair
Her flowers that scent the morning air
  All have there charms for me;
But more I love New England's name
Those words that echo deathless fame
  The Land of Liberty!

18th February, A. D. 1904.

ADDRESS

BY

Rev. Dr. WILLARD SCOTT, Worcester, Mass.

Theme:—On the Trail of the Naturalist.

I use the word "trail" this afternoon in the sense of a clue, or series of clues, given us by those lovers of nature who have truly influenced our views of the world and life more than any others of our time. Primarily, of course, it means the mark, or marks, which the Indians' lodge-poles, trailing from the saddles of their horses, made as they drag over the virgin surface of the earth, carrying the Indian's squaw and papoose, or the utensils of their simple life.

But this is as fair a picture in outline, as we can think of, of the work of the naturalists, those pioneers of all mental discovery and civilization, to whose patient research we all are indebted for our modern view of the world, our relation to it, and our duty in it.

To them we owe those first advances, often hazardous and solitary, by which the world of the past, unknown and dreaded, has become known and rid of its superstitution and uncertainty, preparing for the new interest and faith in it, which are the characteristic moods of our age.

They are the new discoverers of the world, who have ventured out on as noble a quest as the ancient knights of the Holy Grail, bringing to us in their train more precious treasures than bold warrior or crusader ever aspired to. These latter sought with hatred to overcome an enemy; or by war to win a superstitious token, which by some magic charm might make the world blessed.

But the naturalists have had no gory aim or lust. They have not distrusted the world, or sought to ride over it, or trample upon it, in a search for supernatural goods.

They have believed that the greatest blessing of the world was the world itself, better known and loved; that the best good of those who lived in it was not separated from its own self; and that those who would possess and enjoy most of life must find it in a deeper thoughtfulness about the realm in which it is placed, and our natural and wholesome ways of living in it.

Following their trail we have come into a new and very different world, a world better known, far more worthy of being trusted and loved, a world which does not impeach our best ideals of the goodness and wisdom of God, when he made it and put us here, nor teach us to distrust and neglect it in the interest of some supernatural good supposed to be the real end of human living.

The older thinkers and observers looked askance at nature, or with a deep feeling of hostility. Most of it was unknown, even superficially.

Discovery was chiefly of its surface rather than of itself. Living was a fight to maintain one's self in the midst of warring and treacherous surroundings.

Man was in it as an alien, and for the present only, for his disciplining. He had no close relations with the land on which he was encamped, and his release from it was his highest desire and reward.

The Epicurean said, Live in the good you have, forgetting all else. The Stoic said, Fence out the evil by resolution and so secure your temporary peace. The Platonist said, Rise above the things of nature, and in the transcendental realms live the life of the spirit, separate from the baseness below.

Even early Christianity, followed literally through the mediæval centuries, taught an other-worldliness which was the faith and prayer of all pious hearts.

This world, in the language of all, was not man's home, only his pathway to it, and full of roughness and sorrow. Even

the passing beauty and blessing of the world was delusive, or actually ensnaring, things to be shunned, and the more dangerous because seemingly innocent and delightful. There was no room for the appreciation of the natural blessings of life, or real esteem of natural virtues, nor anywhere was the real life, or the real world-building, of this present time.

From much of this, and by anticipation from all of it, we are being led happily by the way of the trail of the naturalist, the world-lover and student, the poet of the fields, the marsh, the woods, the solitary way; the scientist, making new theory and principles of life as he advances, and giving to all living a more natural and satisfying character. He has taught us not to judge the world until we have studied it, or to draw conclusions against it until we have gone at least as far as those who have penetrated farthest.

He has taught us to approach the study with expectation and in the appreciative spirit, and not with prejudices drawn from the mood of the past. As a guide he has been an optimistic friend, seeing deeper because he sharpened his sight with enthusiasm in his inquiry and love for his work.

Assuming to be the more intelligent brother of a universal world-family, he has been admitted to world secrets denied to those who have shut out this discovery by the very assumption with which it was undertaken. He has opened up a new world in part, and given fair tokens of being on the track which will lead at last to such a world as has never yet been dreamed.

The best books of the world today are nature books, the most simple and yet the most profound. The most hopeful and compelling teachers are those who keep close to the nature of things about us, and advance only so far as the immediate facts discoverable warrant.

Leaping to conclusions, as a method of progress, has given way to the painstaking task.

The mood of hostility has been succeeded by the appreciative temper.

Love is needed to be the key that opens not only the heart and heaven, but also the secrets of life on every hand.

If the present world is not the very best we can think of, at least it is the one in which we are living now, by the grace of the giver of life, and doubtless the best for us at the present time; else why are we here?

And if we are to live this life as we should, ought we not to love it and to know it?

And where shall we begin in this quest if not with the next thing to us, and in what way most hopefully if not with the expectation that we shall find good and not evil, beauty and not ugliness, meaning and not farce, joy and blessing and not disappointment? But to do this is to be "on the trail of the naturalist," as he exists among us today, and long may abide with us.

25th February, A. D. 1904.

LECTURE

ILLUSTRATED BY STEREOPTICON

BY

EDWARD W. BREED.

Theme:—A Trip to Jamaica.

Will you go with me in imagination to a land of perpetual summer, to the tropical island of Jamaica, where the thermometer registers eighty degrees every day in the year? To accomplish this trip, we will take one of the United Fruit Company's steamers and prepare ourselves for a five days' voyage. Our sail, after turning Cape Cod, lies in a direct southern course of 1,600 miles, and for the first three days we shall be out of sight of land, and only a few seagulls and a chance vessel will occasionally greet our eyes. If we are sea-sick, and the chances are that we will be, our time will be fully occupied, but after that we will have a good opportunity to make acquaintances and perhaps find those who will become our traveling companions during the entire trip. On the fourth day we will find that the thermometer has reached seventy degrees and that the ocean begins to have that beautiful blue, which indicates that we are approaching the tropics.

Our first land will now be in sight, Watlin's Island or San Salvador, the next we will see Bird Rock, and then Cape Maysi. If the night is clear it will be our privilege to see the southern cross shining magnificently in the heavens as we pass between Cuba and Porto Rico.

It is time now to be donning our thinnest apparel, for we are in the tropics, and the heat will be felt by us, as we have just come from the frozen north.

Passing in and out among these islands clad in their tropical verdue, we finally see in the distance what seems to be a stretch of land enveloped in a cloud; this is Jamaica, but, as we come nearer, the cloud gradually disappears and the beautiful Blue Mountain stands out in all its grandeur, towering 7,000 feet above sea level and rising abruptly from a short distance inland.

We now land at Port Antonio on the northeastern part of the island and are greeted by the natives, eighty per cent. of whom are negroes; and, in their somewhat dilapidated carriages drawn by poorer horses, we are conveyed to the hotel. Our first meal will be an enjoyable one, for we are treated to the many tropical fruits in addition to some of our northern products that have been brought down on the boat with us.

The first tropical sunset will, I think, be the most fascinating pleasure we will have. The beautiful blue of the water, the gorgeous coloring of the sunset and the tropical verdure of the island combine to make a picture that cannot be excelled, and which might be illustrated by the German, who was so enraptured by a beautiful painting which he was studying that he exclaimed, "Der is only von word in de English language dat explains it and dat word I forgot."

Our first day is over and in the time that follows, our experiences may not be as rosy, for, during our trip, we shall many times have to depend upon native cooking and encounter native customs that will require all the Yankee shrewdness that we can command in order to get along.

The sea bathing at Port Antonio is most delightful, the water being very warm. It is here that the eyestones are found and we dive down and bring up a handful of sand and find on examination of it several of these very useful stones. We will carry them in our pockets for we may have occasion to use them on the trains, as we pass through many tunnels with the car windows wide open.

The cocoanut tree is the first object that attracts the traveler's attention, being found on or near the coast. They seem to grow spontaneously and add a great deal to the beauty of

the landscape. When seven or eight years old they begin to bear and continue to do so for sixty or eighty years, sometimes bearing from eighty to one hundred cocoanuts. It is very interesting to see the natives climb up the trunks on all fours as it were, and gather them with their indispensable tool the machete. They cut the end off and allow you to drink the cocoanut milk, which is the safest beverage for the tourist to indulge in.

The wealth of tropical foliage discloses the hibiscus in its bright colored blossoms, which the natives call "shoeblack." The poinsettia which adorns our conservatories in the holiday season is found here growing by the roadside. The bougainvillea runs riot over buildings and trees, and there assumes a brighter color than with us. The jessamine in all its sweetness is frequently found. As we ride along, the picturesque houses, primitive in their construction, with their thatched roofs all more or less hidden by foliage, are dotted all over the island.

The drive from Bog Walk to Spanish Town as we pass the Cobra River has many attractive features. The hillsides are clad with a jungle of beautiful plants, and the limestone rocks seem to be a hiding-place for the maidenhair fern. The canal, carrying the water to Spanish Town with its row of cocoanut trees on either side, is a very cool and attractive scene. As we approach Spanish Town the country is less interesting and the road very dusty. Spanish Town, a former capital of the island, is rich in historic interest. The English cathedral, the monument erected to Admiral Rodney for his loyalty to the people, and the public buildings, are the most important objects of interest. There are a few attractive estates, probably laid out by officials in her majesty's service.

Kingston, the present capital of the island, is a busy place and has the only electric car service on the island. The public buildings and stores are not attractive on the outside, although some of them are quite so on the inside. The residences of the better class show a type of English life and are very pleasing, with their walls or fences and forecourts, fountains and formal gardens.

The lover of plants will find at Hope Gardens and at Castleton much that will be of interest. Palms will be found that are veritable trees. The pandanus, century plant, oleander, justicia, acacia, dracena, begonia, araucaria and the croton in all its beautiful tints are here in great numbers. At Castleton Gardens the rainfall for twenty-six years has averaged 113 inches per year, while on the south side of the Blue Mountains at Kingston only 30 inches falls, and that too in a distance of about twenty miles.

The bamboo serves many useful purposes. It forms a very important part in the construction of the natives' houses; growing by the roadside it forms an interesting feature. The African bamboo has a very peculiar habit of twisting its growth in toward the trunk, then upward, forming an impenetrable mass of growth.

In Mandeville, at an elevation of 2,000 feet, is probably the most comfortable spot for the tourist, a place that in some ways reminds one of an English village. The people are most hospitable and take great pleasure in showing attention to American guests. This is the home of oranges, grape-fruit and coffee, the first two most luscious and the other the best in the world after it has been properly cured. Unfortunately the natives use the coffee green and make it so strong that it is not liked very well by the traveler. Here and at Kingston we find the most interesting markets. We shall miss a great deal if we do not visit these places on market-day, when the people for miles around come to market, laden with their scanty products to barter for other goods. The women carry everything on their heads, frequently requiring assistance to place in position the loads which they are able to carry for a long distance. The little children are trained to first balance an empty pail or basket and then to increase their load. It is not uncommon to see young women carry a can holding five gallons of water and hardly spill a drop. When their load is too large the donkey is called into service, and on these market-days there will be seen several hundred coralled near by while their owners are busily engaged in disposing of their wares.

As we approach the western end of the island we will find more of a grazing section and we notice all the animals have a better fed appearance. The cows give a very small amount of milk, due no doubt to climatic conditions, but they produce excellent beef.

Sugar-cane has been grown for many years, but at the present time it is made into rum rather than into the refined sugar, as the profits in the latter are much smaller than in former years. It grows continuously and there are some very old plantations.

Saint Ann's Bay, situated on the northern side of the island, has justly been termed the garden spot of the island of Jamaica, and here every thing seems to grow very luxuriantly and an air of thrift is seen which is more noticeable than anywhere else on the island. The drive from Saint Ann's to Ocho Rios is very beautiful. It is along the shore, and in and out among the boulders and cocoanut trees we wind, passing the Roaring River, a sort of Niagara, flowing on through the tropical growth to the sea. The maidenhair fern is here found in great abundance, the fronds being very large.

The Fern Gully is a point of interest worth visiting, and as you drive through this wonderful natural formation and look upon either side your eye is greeted with a wealth of ferns and other foliage that is most remarkable.

The breadfruit tree is a very ornamental one, with large glossy leaves and peculiar fruit, which the natives put to good use. The mango is a fruit much liked by the natives, but certainly needing an acquired taste or something else to relieve it of a very pronounced turpentine flavor. A few pineapples are grown and those we tasted were most delicious. Tobacco is grown to some extent, and the coils you find for sale at the shops are very curious. These they sell by the yard. The tobacco is not of the best and they rather depend upon Havana for their cigars, in part at least.

The logwood tree, similar to our locust, forms a very important article of commerce, and its roots are frequently seen on the wharves waiting for transportation. This is sold by weight

and is used for dyeing. The cotton tree is a very conspicuous tree in the landscape, growing much larger than other trees, and its peculiar trunk formation impresses one with the idea of stability. Its wood is very light and is not of much value. Orchids are found growing in the branches of this cotton tree, sometimes completely hiding the bark; this with the Jamaican mistletoe and other plants of a parasitic growth gives the appearance of the tree being well laden. The ponciana is a tree of considerable size, with its finely cut leaves and great long seed pods.

One might continue almost indefinitely in describing the great varieties of trees. I was told by a native that he could readily collect two hundred specimens of wood from a very limited area.

Probably no one variety of fruit is so extensively cultivated as the banana. This we see growing in great abundance, and the shipments north frequently reach a half million bunches weekly. They are picked green, carefully brought on the heads of the natives to the storehouse, then transported to the wharves to be loaded on the steamers. It is interesting to watch this latter process, as the natives pass in line with a bunch on their heads to the gangplank, receiving one shilling for carrying one hundred bunches. They are carried largely by the women. They also load coal in the same way, carrying a bushel at a time. The following couplet is rather illustrative:

> "Here's to the land of the Banan
> You pay what they ask and get what you can!"

The cacti is found in and about Kingston and it forms a hedge that no form can penetrate, and our barbed wire fence will certainly have to take second place.

The roads are all under government control and are kept in excellent condition, crushed limestone being used and all the work performed by hand.

Much can be said historically concerning Jamaica, beginning with its discovery by Columbus in 1494, continuing for nearly one hundred and fifty years under Spanish rule and since then

dominated by the English, who have given to its citizens a civilized life. Of late years the coolies from India have been a great factor in the labor of the island. They make excellent gardeners and are more energetic than the natives.

Jamaica is certainly full of interest to the tourist who goes with a desire to study the very extensive flora and to learn from the people their habits and customs. The island has justly been termed the Gem of the Antilles.

3rd March, A. D. 1904.

ESSAY

BY

M. SULLIVAN, Revere, Mass.

Theme:—The Ideal New England Market Garden.

The modern market gardener is a man of ideas; the successful market gardener is always a man of practical ideas; and those ideas are studied as a problem beyond the experimental stage, and then become a standard beyond question as the best to adopt.

The New England climate, so variable and so liable to sudden changes, is a local study of which the market gardener should have a fair knowledge. He must necessarily understand, not only the outside climatic changes, with which he is at all times contending, but he must also understand how to create them artificially under glass, in order to produce his crops. The temperature required to grow crops of lettuce, under glass, differs materially from the temperature required to grow the cucumber. So he becomes a weather scientist, and studies temperature both under glass, and in the open. There is no other business which requires preparation more than market gardening. All operations must be thought out, and worked in advance. So preparation is one of the essentials to success. The four seasons, then, he should understand, and are the keynote to the market gardener's success.

All over New England are locations where the soil and climatic conditions, markets near by, or cheap transportation to and from those locations, are to be found.

When a suitable and satisfactory location is decided upon, here then the ideal market garden or farm, the future home,

the business venture, the independent life, the individual effort, begins. Like one who fishes in the ocean and from his experience knows where the best fish are, so the tiller of the soil finds his spot, his ideal location, in suitable soil and surroundings, and here he pitches his tent.

First of all the home, and all else to follow, should be made to conform to this. Year after year the generous soil, contributing its bountiful harvests, brings gladness to the heart and joy and happiness to the home and to the family.

The resident of the city, with all its frivolous life, who only lives to consume and carries in his purse about all his source of supply, can never realize the contented mind, the joyfulness and the happiness of the independent farmer and his family. This when his barns and store-houses and cellars are full, who but the farmer and market gardener can best realize and tell of this?

Again as to the location. Who of the first settlers on the then so called Poverty Plains, in Arlington, could foresee what today can be seen there, a veritable "Garden of Eden," spoken of by the visiting German farmers, during the past year, as showing the most fertile, scientific and highly cultivated section seen by them during their fourteen thousand miles of travel,—a barren waste of land made to blossom as the rose; horticultural science built up and constructed on entirely new and modern lines. So location may be incidentally made to conform with surrounding circumstances.

THE HOME.

First of all then should come the home, and all else that may follow should be made to beautify, to build up and to conform to this.

Trees grow while we are sleeping, they add value to the home, they beautify and shelter, and they stand long after those who planted them, as a living contribution to posterity, their monument, appreciated for their grateful shade. Plant trees then about the home, for they are the outside sentinels,

bearing fruit, guarding, protecting and beautifying nature and our living home.

Having conceived his ideal market garden, having planned and framed in his mind, and then on paper, what he may yet sometime see in reality. For every business has its ideal,—the ideal manufacture, the ideal newspaper, the ideal school, why not then the ideal market garden and farm? First of all, no matter of what extent or limit his acreage, here he plants his home, for the very nature of his business compels him to locate as near the centre of his operations as he possibly can, for his very success necessarily demands his presence here as near central as it is possible to be.

Home then, and its surroundings, must be considered, and here the idealist expends his best thought, practical convenience and comfort, in all things, for the family means much,—location of buildings, one of these.

The dwelling house, when possible, on the most prominent and highest elevation, for convenience and drainage, as well as oversight, and view of his surroundings and operations. All this is essential, and adds pleasure to his business and comfort to his home. Out-buildings separated, but at convenient distance from the dwelling. There are many things to consider in the location of the principal out-buildings. Convenience in all things for which they are required, comes first of all; comfort of the live stock; disposal of the manure; and first of all the cellar should be made most convenient, as the receptacle for storing and preserving fruit and vegetables to be sold during the winter months. In our severe winter climate, frost-proof cellars are absolutely necessary to success in preventing great loss in perishable produce; walls made rat proof, and cellar bottom cemented. To say, in after life, when all is completed, the home that I live in, the out-buildings and store-houses, the plant and greenhouses,—all those have been built by me, or under my direction. This in itself constitutes much in building up the ideal farm. You may call it sentiment or what you will, but is there anything in this life

that can give one greater pleasure than: "This is my conception, I have built my home."

The barnyard is always of the utmost importance, therefore its location should receive all due consideration, for on its convenience much labor can be saved. This important auxiliary, when possible, should be located in the rear and connected with the barn; the manure from the live stock, all refuse and decaying vegetable matter, deposited here. Also where the poultry are kept, the hen-yard and poultry houses, should adjoin, for there is much benefit in convenience in the care and management by this concentration, besides the greater importance of continuously adding to that important factor to success, the manure heap. The range of the poultry may be a part of and connected with the barnyard.

Thorough and complete drainage must be provided for the out-buildings as well as the barnyard. Proper division of the barn, cellar or storage cellar, is absolutely essential to prevent the absorption of odors by the fruits and vegetables that may be placed therein. There has been very great loss and disagreeable consequences come from this, and this applies also to all outside pits, where the celery crops are stored, where all impurities either in the covering material over the pits, or in fact within, should be absolutely avoided. Celery, apples, pears and practically all of the fruits and vegetables which are used by the consumer without cooking, should be protected to prevent absorption.

The cold storage houses where chemicals are used in their process of manufacture of cold air, are as yet unable to prevent this, causing much dissatisfaction to the seller, as well as to the consumer. Cold storage houses, this comparatively new addition to civilization, is here and has come to stay. In looking back to the primitive dugout of the backwoodsman, and the most modern cold storage plant, one is reminded of the advantages over the past, also which the speculator has in these days over the farmer in storing his crops. One of our best and largest onion growers raised and stored away his crop for higher prices, in those earlier days, calling in one of the largest

speculators and business men in the Quincy market to see them, he remarked: "We do not like to see you doing this, because you are now doing what has been done by us heretofore." "Capital," I said, "allows me to do this and I, as producer, will compete in the market with you as to price."

The competent market gardener requires intelligence to construct, to lay out, to cultivate, to harvest and to sell his products. His own individual ability and intelligence comes first of all. His plans are premeditated, for about all his operations are outlined in advance. His crew are what he himself selects, he always remains the captain, he plows the main furrow, and he stands responsible for the result. It requires now the educated brain, the skilled and trained hand, to bring the best and the largest results from an ever generous soil, and this more than super-abundance of muscle. Still this also must be in fair supply. But where the market gardener's operations are large or fair to medium, the ability of his lieutenant should always correspond fairly well with that of his own.

In this age of agricultural machinery, America undoubtedly leads all the world in the perfection and durability of construction, and how to apply properly the various machines to field and garden. Operations will require intelligence second to no other, even to that required in general manufactures. This then is why the best help to be had is generally hired, even at a somewhat higher price than that obtained on the ordinary farm. And yet something more may be added, permanency means settlement and location near one's home. Your work people are your neighbors sometimes.

And this also brings a factor in the construction of the ideal market gardener's home. The schoolhouse is soon called for; the workmen's children, as well as one's own, soon demand attention, and this desirable addition should never be denied. This is another most important reason why those who are to be employed should be the very best help to be had. The boys and girls are soon the men and women, and will take your place and mine.

All this I have experienced in my forty years of New England farm life, and the boys of yesterday are the men of today. Side by side at our public town meetings, they whose parents were yours and my employees, are in the councils of the town and city governments. No one now raises a question as to the importance of the public schools in any town or city. The old-fashioned method universally adopted forty years ago, of boarding and lodging the help, making them members of the family, is now, where possible, discontinued, and no one thing has contributed more to the comfort and happiness of the family than this.

Many years ago I adopted the plan now almost universally used of providing tenements for married help, and they caring for and providing a home for the unmarried ones. This plan is most satisfactory, and contributes very largely towards making and building up the ideal New England market gardener's and farmer's home.

WHOM SHOULD THE FARMER OR MARKET GARDENER EMPLOY?

The market gardener, whose occupation requires the better type of intelligence to conduct his business, must employ the best, and in his section only the elements which by nature and from natural instincts are best fitted for his business.

Plain, ordinary or general farming has a class of laborers which fits that line of agriculture, and the compensation corresponds to the requirements of his work, which neither requires or expects the steadiness of employment nor the wages that are paid in first-class market gardens. Permanency of labor, continuance of employment, is perfectly natural to both men and women, and all others who depend upon their daily toil for their living.

Then first of all in the employment of the kind of labor required, is good judgment to get help because of the possibility of the permanency of the employee. But it may be asked: "Why is this permanency necessary, and why more than in ordinary farming?" I, myself, am a graduate from both, and think I am well qualified to answer the question, because

I have done plain farming, kept a dairy of forty cows, raised stock, both horses and cattle, and so being qualified I may answer the question, why this difference? Because the risk of very great loss in the business of market gardening, the risk undoubtedly is large in so many ways. Great losses can and do occur. A case in mind, where a gardener lost through a drunken employee letting his fires go down on one of those cold nights recently, destroying, in a night, years of toil. Therefore the utmost vigilance at all times is required to be the successful market gardener, who should always plow the main furrow, or hold the reins.

Market gardening is an ideal occupation. The utmost vigilance and perseverance under difficulties, system in all things, judgment in classifying crops, and preparation,—all these are necessary for complete success.

While, in the general farming industry, it may be said that it is not run on business principles, this is not so, and does not apply to market gardening.

A system of bookkeeping best fitted to each man's business generally prevails, and this according to the volume of the business done. That market gardening can be brought down to, and made a thoroughly systematic business, reference can be made to those now engaged in the business, by such market gardeners as W. W. Rawson, of Arlington; Hittinger Bros., of Belmont; Frank Cooledge, of Watertown; and many others who are now supplying the Boston market with the leading products of the garden, the orchard and the farm. What manufacturing, or any other business, is it possible to work successfully without adopting, first of all, method and daily rule in doing one's work?

Commencing with a daily noting in the calendar the temperature taken from a first-class thermometer once or more each day: 1st. clear or cloudy. Snow or rain. Then the degree of heat or cold indicated by the thermometer, and you have a most pleasing knowledge acquired by a few minutes' loss of time, which gives you a record, not only good for future reference, but also a daily knowledge that is of much value.

How many, for instance, here in this audience can tell from memory that in January, of the present year, there were eighteen clear days; five, cloudy; seven, snowing; and one, raining. February: clear, seventeen; cloudy, five; snowing, four; raining, three. Who, then, but those who note down upon their calendar the daily temperature and weather conditions can possibly recall this useful and practical knowledge?

The question may be asked: "What does this information amount to, and how applied, to assist one in market gardening and farming business and taken but once a day?" Go into the average greenhouse, successfully growing either flowering plants, or that demanding equal or higher scientific skill or knowledge, that of growing and maturing a vegetable crop, either lettuce or cucumbers, in mid-winter, and you at once see the absolute necessity for this study, whether the operations are upon a large or medium scale. The daily temperature in greenhouses, and that of out-of-doors should be recorded side by side where the crop is growing, and this is the compass which directs and instructs the skilful grower.

The old time market gardener grew a variety of both fruits and vegetables. His market from house to house was laborious, but very pleasing, his customers always welcomed him, for he dealt honestly and served them well. The open market of the present day, or the commission houses, which are now selling largely the products of the gardens or farms, have superseded the old way, but this change also requires honest dealing in the packing, in presentable form, of the products of the farm. "How have you built up such a large trade in selling my celery?" said I to one of the largest dealers in the Quincy market. "Because we can sell every bunch right down through the box," was his reply.

Then honest dealing, in the open market, as well as with your commission house, is another of the necessities that bring success.

I am a great lover of fruit growing and try to study the unfolding bud, the expanding leaf, the beautiful blossom and the matured fruit. One of my resolutions is yearly to plant

a tree or to plant a vine in any available place, spring or fall, care for them to maturity and rejoice at their fruiting. Therefore plant fruit trees, and if you do not live to enjoy the fruit, someone else will. But more than all else the apple, the pear, the peach, the plum, surrounding the ideal New England market gardener's home, will add to its value and remain long a reminder of his true worth.

Specializing is now prevailing, so that the grower of many varieties of yesterday, is today the producer of only one or two. The market gardener becomes the florist, a degree higher perhaps in scientific knowledge, but not in the enlightened mind and progression, which must always lead in the growing of the necessary and substantial fruit and vegetable products. I am a fruit grower because I like and am in love with the business; this branch of which occupies perhaps one-half of my premises, and is the very ideal of the pleasure in my business. The acquisition of great wealth, now prevailing, is as nothing in comparison to pleasure in one's life, found only in contentment of mind and being in love with his business. The great Bismarck, asked to define "Happiness," replied: "The gardener in his own garden, pruning knife in hand."

To specialize means investment of capital, a venture in a few rather than in the many crops. This question, is it best, is for the individual, his surroundings, his advantages and his capital, but greater and above all, brains, the educated, scientific common sense.

The question once asked was: "Is the greenhouse necessary for the market gardener and the farmer"; while at the present time, "Is the farm necessary for the greenhouse?"

The use of immense quantities of glass for floriculture and vegetable growing will still continue to multiply, for soil sterilization has settled the question as to the safe investment of capital in this business, beyond a reasonable doubt. There is no doubt of the fact that this discovery of partial sterilization of the soil by heat applied through perforated steam pipes up to a temperature of 212 degrees will cleanse the soil of

insect and fungus diseases, leaving it in condition to produce the best greenhouse crops.

There are good market gardeners who still avoid the greenhouse, but use hotbeds for plant growing, and are successful in the instructions which are acquired in growing, in this much more simple form, plants and crops suitable to them. But the greenhouse in comparison with the hotbed is like the college to the primary school. The market gardener who can step up from the hotbed to the greenhouse and work this successfully, has reached the highest degree, scientifically, in the horticultural profession.

To be a proficient, up-to-date market gardener requires some education, but if deficient he soon gets there, for he is always a student. President Charles Eliot, of Harvard College, would make an excellent horticulturist because he is an idealist. The great university is his ideal, for there he is now engaged in conceiving and building up a magnificent structure for the education of coming generations.

The market gardener should be well read, not alone in the agricultural magazines and newspapers, but also in the very best standard books on agriculture, horticulture and the raising of stock. The old time gardener and farmer cared but very little for book information, and no wonder, for in his day there was but little to be had, but today no question in agriculture, the science of horticulture, the raising of stock, the dairy and the science of poultry raising but are to be had; and all this at so slight a cost that no progressive producer can afford to be without the books, the modern publications, without which the market gardener would be like a ship without rudder or compass, her captain endeavoring to navigate the seas.

It is by reading that we learn what has been done in the past; and prepare for the future by as broad a knowledge as possible, how seeds are raised, plants are grown, whether from seed or cuttings, and which are best. All this can be learned from reading.

Let the farmer and horticulturist then consider his occupa-

tion amongst the blest, for in this great country, living in his ideal country home, surrounded by his family, enjoying the fruits of his labor, he may well say: "I am a king, for the independence of my occupation makes me so. I help to feed the masses, to fill the poor man's basket, bringing abundance to his door, and to the man of wealth, the delightful luxuries for his banquet table. But greater than all, and above all else, I am enabled to live a better life, to stand among men, because out of the generous soil, with hard, honest toil I produce enough for my living and my home."

This then I give you as my ideal New England market garden and home.

9th March, A. D. 1904.

ANNUAL REUNION AND SOCIAL GATHERING.

64th Anniversary of Organization and
62nd of Incorporation.

Committee on Reception: *President* Hadwen, *Secretary* Hixon, C. L. Hartshorn, Edward W. Breed, Nathaniel Paine, Henry B. Watts, Charles Greenwood, Mrs. A. A. Hixon, Mrs. W. DeWitt Manning, Miss Minnie Ellam and Miss Laura Joudrey.

An informal reception was held from six to six-thirty under the direction of President Hadwen and Charles W. Wood, toast-master for the evening, after which the company marched to the banquet hall above.

Those seated at the head table were: President O. B. Hadwen; Mayor Walter H. Blodgett; Mr. and Mrs. Chas. W. Wood; Marcus M. Burdick of Providence, President of the Rhode Island Horticultural Society; President Jonathan Eames, of the Massachusetts Fruit Growers, Sherborn; Burton W. Potter of the Worcester Agricultural Society; J. Lewis Ellsworth, Secretary of the State Board of Agriculture; F. A. Waugh, Horticulturist of the Massachusetts Agricultural College of Amherst; William P. Rich of Boston, Secretary of the Massachusetts Horticultural Society; Mr. and Mrs. Geo. S. Ladd of Sturbridge, Master of the Massachusetts State Grange; W. W. Rawson, President of the Market Gardeners' Association of Boston; Prof. H. T. Fernald of the Massachusetts Agricultural College; C. W. Smith, Secretary of the Rhode Island Horticultural Society; Michael Sullivan, Revere; Benjamin P. Ware, Clifton; George Cruikshanks, Fitchburg; A. W. Macomber, H. R. Tiell, Bristol, Rhode

Island; Mr. and Mrs. James Draper; J. K. Greene; Secretary Adin A. Hixon and wife.

President O. B. Hadwen called upon Mayor Blodgett to say grace, in place of Dr. Willard Scott, who appeared later in the evening.

President Hadwen called to order at seven-forty o'clock, and welcomed the guests and members of the Society.

In our organization there is but little pride of family or wealth. Men and women are rated by their merits, by their zeal and intelligence and industry in promoting the objects that the founders of this Society and those of their associates and successors, have done for the improvement and profit of the community.

At this Society meeting it is our privilege to learn from each other, and to discuss the best methods of improving our homes, our lands, our fruits and our flowers, culling year after year, from our gardens, from the wisdom of scientists and thinkers, from our exhibitions and from the experience of practical workers.

Let us strive to make labor respectable and respected for both sexes. The idea that labor is degrading is anti-republican and void of good sense. Many lady members of this Society are engaged in horticulture, cultivating their own gardens, and are even more accomplished in all phases pertaining to good living and to good society, with their practical knowledge of horticulture.

This Society is large enough, strong enough and able enough to take a commanding position with reference to all matters that pertain to the interests it represents, and was incorporated to foster.

It has recently discussed the encouragement of school gardens, to teach the young the use of their hands in the cultivation of the earth, to produce something that will add largely to future enjoyment of life; that will interest every member to make active workers for the future benefit of the Society and the public at large, and a distinct educational value to those engaged in the good training of both head and hand.

President Hadwen referred to the old-time idea that little knowledge was necessary to cultivate the soil, and the changes in that respect. He recommended a course of study, in which agriculture and horticulture should have increased attention in the public schools.

He expressed the opinion that the time is ripe for the school garden, a sentiment which was received with applause. He told of the past good the Society has done, especially the record for the past year, and predicted better work in the future.

President Hadwen introduced Gen. Charles W. Wood as toast-master, and that gentleman was received with applause, which was repeated all the way through the speaking, as he got in a delicate jab at some one of his victims, and in turn was made to realize there were others, when the speakers turned on him.

Gen. Wood dwelt on the desire of the fatigued dweller in the cities for a life in the country, and then introduced Mayor W. H. Blodgett as the first speaker, saying he was always the mayor of the Society, and now has merely a broader field.

The mayor was received with applause, and told of the different positions which he has had and wondered since he was asked to do the work of a minister at the dinner, if he was a minister and did not know it.

He praised the Society and the farmers of Worcester county, and said it was partly owing to the influence of the Society that better fruit is raised in this section than formerly, but some of the influence undoubtedly came from the kicks of the marketmen, a sentiment which evoked laughter. He believed in organizations, and referred especially to the Grange and the work he has seen it do here and in New York. He urged a setting of high ideals and a constant endeavor to attain them.

W. W. Rawson, Arlington, Vice-President of the Massachusetts Horticultural Society, President of the Boston Market Gardeners' Association, Selectman of Arlington, largest market gardener in America, and head of a large seed store, was next introduced and responded with some good stories, a poem,

and urging for study of new methods and use of brains, rather than manual labor, in order to attain better results. He told of the debt the Massachusetts Society owes to the Worcester Society, and the success the exhibitors from Worcester have had at Boston.

Prof. F. A. Waugh, Horticulturist at Amherst College, was the next speaker, and he kept the party laughing most of the time by his admonitions to always stand up for one's own methods and ways, and he illustrated how this could be done to the confusion of the outsider who tries to get ahead of the New England man in horticultural matters.

President Burton W. Potter of the Worcester Agricultural Society got square with the toast-master for a starter, and then dwelt on the changes in the ideals of the people, who formerly regarded a residence in a city as the better thing, but who have learned to regard the country as the place affording true living. He gave figures to demonstrate the superiority of the country as a place of residence over the city from many standpoints.

Joseph K. Greene was called on, and he kept the gathering amused by his observations on horticultural and other topics. He regretted one thing, which has not been preserved or canned up to the present, the boyish appetite.

There was applause at this point for Rev. Dr. Willard Scott, pastor of Piedmont church, who came in late and took a seat at the head table.

Mrs. George S. Ladd, Sturbridge, was called on to speak for the State Grange, as her husband, who is the head of the order, was unable to do so. She spoke for the Grange and its usefulness, from the standpoint of the farmer and his wife as well, and eulogized it as a great factor in the country's life.

Rev. Dr. Scott was the next speaker, and he briefly told of his pleasure at being present, and then got after the toast-master in a keen and witty style which brought out laughter and applause.

Michael Sullivan, Chairman of the Revere Selectmen, who is trying to combine horticulture and politics, told cheerfully

of his success at it, and his liking for horticulture, and the necessity for clean politics in his town, which has doubled its population in the past six years, and which is a scene of cosmopolitan confusion at the present time.

Gen. Wood explained why he did not call on Secretary J. Lewis Ellsworth of the State Board of Agriculture, the hour being later than was scheduled for the closing of the speech-making.

After the close of the session in the banquet hall, there was dancing in the main hall, to music by Bicknell's orchestra.

The floor director was Arthur J. Marble; and his assistants were, A. M. Powell and W. K. Stanley; and the aids were, Edward A. Bartlett, Fred H. Hammond, Henry E. Kinney, Myron F. Converse, Robert B. Rich and Allyne W. Hixon.

The committee in charge of the winter meetings and the reunion was: Arthur J. Marble, Edward W. Breed of Clinton, C. L. Hartshorn, President Hadwen and Secretary Hixon.

10th March, A. D. 1904.

ESSAY

BY

JOHN W. CLARK, North Hadley, Mass.

Theme:—Cold Storage for the Orchardist.

Commercial orcharding on an extended scale is of recent date and the markets of today, instead of depending on the local supply as in years past, receive fruits from the most distant parts of our land.

This has been made possible by the increase of railroads and adoption of refrigerator cars and cold storage, which makes possible the marketing of the most perishable fruits hundreds and even thousands of miles from the place they were grown.

Passing over the benefit cold storage is to fruit growers in other parts of our land, let us see what advantage can be derived from it in the handling and marketing of the products of our orchards.

The old way of storing the apple crop in cellars and ordinary buildings, subject to the daily variations of temperature, is becoming a thing of the past among the most progressive orchardists, as too uncertain and wasteful; and in their place houses are being built especially for storing fruits, where the inside temperature can be controlled and held without variation at the desired point.

In taking up this subject of cold storage let it be distinctly understood that cold storage does not of itself add anything to the quality, quantity or value of the fruit. It simply holds the fruit without variation at a certain degree of temperature (with the apple 32° F. is considered the best), and does not insure against loss from decay or spread of disease.

The grower or handler, and not the one in charge of the storage, is responsible for all loss from these two sources.

Fruit that is well grown, free from disease, picked at the right time and placed as soon as picked in cold storage, will continue sound for a long time; while fruit that is poorly grown, diseased and over-ripe when stored will come out in poor condition; as disease and decay are not entirely checked while in cold storage, unless the fruit is kept continually frozen, but will continue to increase, though more slowly than when stored in the common way.

The advantages to the orchardist of having a building in which the temperature can be regulated in which to store his fruits can be summed up under four different heads:—

1st. The crop of fruit can be gathered and housed in a much shorter time with the same amount of help than when it is barrelled and shipped at the time of picking. The advantage of this is much greater than those who have had but little or no experience in handling a large crop of fruit imagine. For with a large crop of fruit, and help scarce and hard to get, the loss caused by storms and by the fruit getting over-ripe and dropping from the trees often amounts to one-third or one-half of the total crop. While the market value of a dropped apple is not over one-half or two-thirds what it would have been if picked.

2nd. The dropped and short-lived fruit that must be disposed of at once can be held until this soft and cheap grade of fruit, with which the markets are often overstocked during the time the crop is being harvested, has been disposed of, when better prices can usually be realized.

3rd. The work of assorting and barrelling the fruit can be done during winter, when help is more plenty and cheaper than at the time the crop is being gathered.

4th. It puts the orchardist in a position where he is not compelled to sell his fruit at a sacrifice on a glutted market, to prevent loss from decay, but gives him an opportunity to

watch the markets for the best time to dispose of his fruits. It also gives a longer time in which to handle the crop.

The orchardist intending to store his fruit to get the best results, should grow it free from insects and disease; care should be taken to give the fruit plenty of sunshine and air while it is growing, that it may be well colored when picked, as color is of great importance to successful storage of fruits, as that which is of poor color is more subject to scald while in storage than fruit which is well colored. The degree of ripeness at the time of picking is an important factor in storing fruit; it should be well colored, but firm and not overripe.

If there is one thing on which success in storing fruit depends more than upon another that the orchardist has to do with, it is to get the fruit from the trees to the storage within the shortest time possible, for an apple ripens much faster after it is picked, especially if the weather is warm, than when it is hanging on the tree. An apple that has begun to ripen before it is placed in cold storage, will go on ripening, though more slowly than if it had been kept in the ordinary way.

I am not here as an architect to tell you what is the best way to construct a building for cold storage, but simply to give my experience in building and running the house I have, which was built in 1898.

The main building is forty-two feet long and thirty-two feet wide outside measurement, with 7-foot posts, with 2-inch by 4-inch studding between. The house rests on a stone and brick foundation. On the outside the house is boarded with novelty siding. Building paper was used between the studding; when it was boarded with matched pine, this was papered, then 2-inch by 4-inch studding, which was again boarded; the 4-inch space made by this boarding is filled with charcoal dust (using some 500 bushels), this boarding is also papered and 2-inch by 4-inch studding again put up and again it is boarded, this gives a wall about 16 inches thick with three 4-inch spaces, the middle one filled with charcoal dust; the outside and inside space are dead air spaces.

In the roof above the main part of the building is an ice box, 6 feet high and 9 feet wide, running the whole length. The floor of the ice box is covered with galvanized iron, which is inclined one inch to one side and carries the water into a gutter, from which it runs through pipes to the ground into a drain.

Extending the whole length of the ice box on each side is an open space 15 inches wide, for the circulation of air between the main storage room and the ice box.

In each end of the ice box are double doors for putting in ice, which is stored in an icehouse near the end of the cold storage.

The ice is drawn up to the ice box by horse and pulleys. About two hundred 20-inch cakes are used at each filling. The number of times the house has to be iced depends on the weather during picking and upon the amount of fruit stored. I have never filled it over four times in one season. Ice is kept in the box from the time fruit is first stored in the fall until the fruit is all taken out in the spring, to keep the temperature of the storage room from varying during the warm weather that usually occurs during winter. In the main part of the building are inside and outside doors at each end. Between these doors is a sliding door with iron rods 3 inches apart to keep out intruders when the other doors are opened on frosty nights to cool the house and save ice.

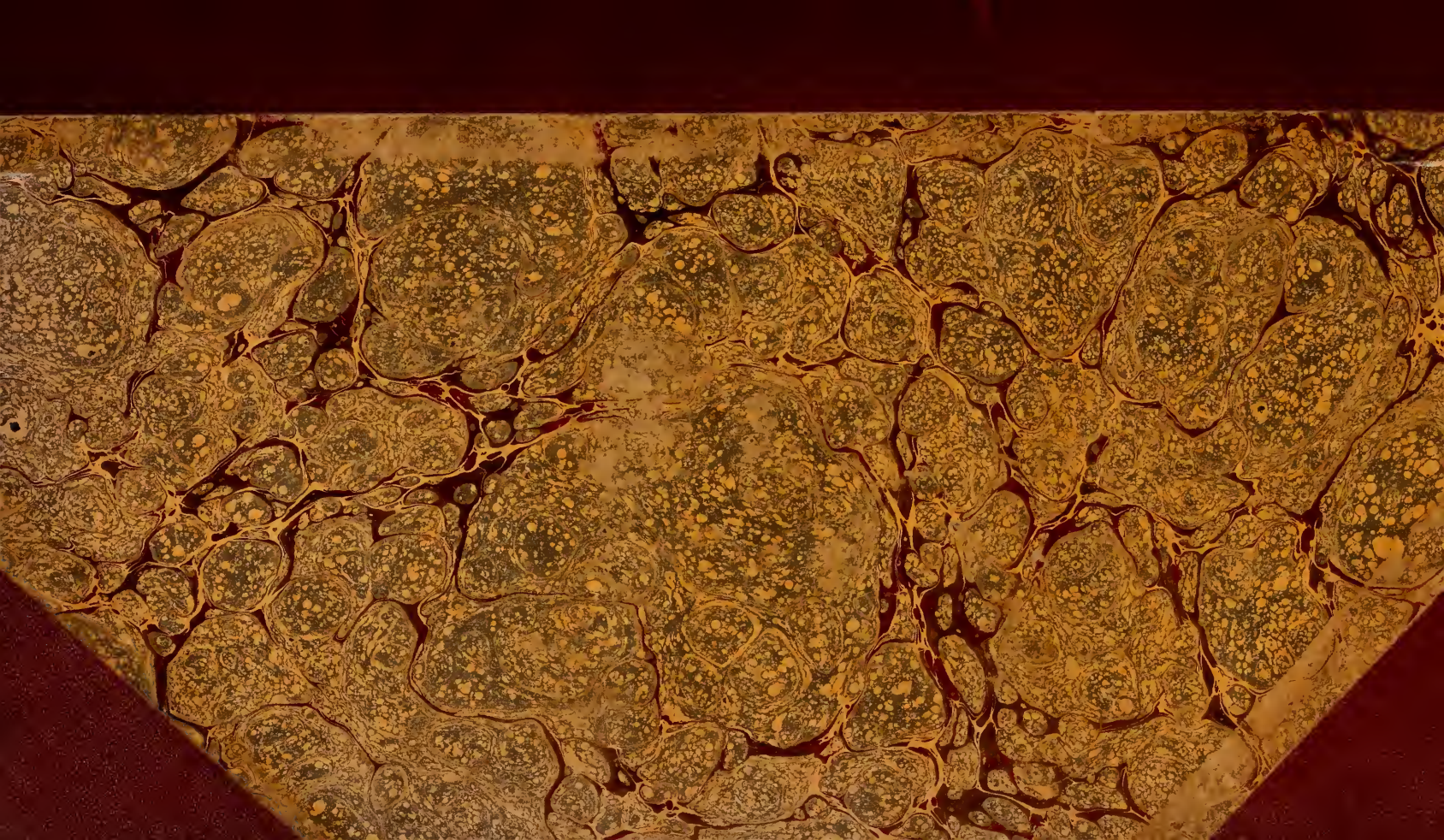
The floor is of brick, with the exception of the driveway and walk to the workroom, which is situated at one side of the main building, with which it is connected by double doors; this room is 14 feet by 22 feet.

The temperature of the house can be held at about 40° F., while the weather is warm both night and day, but when there are frosty nights it can be lowered by opening the house at night and closing it before the sun is up in the morning, and as the outside temperature gets colder, that inside the storage room can be gradually brought down to 32° F. where it can be held with little variation until spring.

If the fruit is stored each day as it is picked and kept in

a temperature not higher than 40° F. and lowered as frosty nights will allow, apples will be in as good and possibly better condition December 1st, than they would have been if they were exposed to our ordinary fall weather for two weeks before being put in the most approved cold storage.

One is often asked if apples do not sweat or gather moisture while in storage. In running my house I have found no trouble to keep it dry if care is taken not to open the house and admit the outside air when it is warmer than the temperature inside, for when a warm atmosphere strikes a cold surface its moisture is condensed and deposited on that surface; this never happens when a cold atmosphere strikes a warm surface, and it is my practice to open all of the doors cold nights in the fall to admit the outside air to help cool the fruit and save ice.

When storing apples direct from the orchard as they are picked without being sorted, I prefer storing in bins rather than in barrels or boxes, as more fruit can be stored in a given space; fruit stored in bins will cool sooner than when stored in boxes or barrels; this cooling of the fruit rapidly is of great importance.

The time an apple will keep after being taken from cold storage depends on the degree of ripeness when taken out and the temperature to which it is exposed.